# *Arkansas State Crime Laboratory*



## *QUALITY MANUAL*

**Executive Director:**
***Kermit B. Channell, II***

# 1 SCOPE

This manual follows the requirements specified by American Association of Crime Laboratory Directors – Laboratory Accreditation Board (ASCLD/LAB) International Program which utilizes the ISO/IEC 17025-2005 standards and 2011 ASCLD/LAB International Supplemental Requirements.

### 1.1 International Standard- General Requirements

The International Standard (ISO/IEC 17025-2005) specifies the general requirements for the competence to carry out tests, including sampling. It covers testing performed using standard methods, non-standard methods, and laboratory developed methods.

### 1.2 International Standard- Scope

The International Standard is applicable to each discipline performing tests regardless of the number of personnel or the extent of the scope of testing activities. When the laboratory does not undertake one or more of the activities covered by the International Standard, the requirements of those clauses do not apply.



#### 1.2.1 ASCLD/LAB International Program

As part of the ASCLD/LAB International Program, ASCLD/LAB included supplemental requirements to the International Standard to address specific items for forensic science testing. Forensic Science refers to the examination of crime scenes, recovery of evidence, laboratory examination/analysis, interpretation of findings and presentation of the conclusions reached for investigative or intelligence purposes or for use in court. The broad field of forensic science involves the examination/analysis of a wide range of items and substances.

The Arkansas State Crime Laboratory is currently accredited through the ASCLD/LAB Legacy Program in the disciplines of Drug Chemistry, Toxicology, Trace Evidence, Biology, Firearms/Tool Marks, Latent Prints, and Digital & Multimedia Evidence.

The Arkansas State Crime Laboratory (ASCL) is currently seeking accreditation through the ASCLD/LAB International Program in the following disciplines and categories of testing listed in the table below.

| Discipline | Categories of Testing |
|---|---|
| Drug Chemistry | Controlled Substances<br>Quantitative Analysis<br>General Chemical Testing<br>Clandestine Laboratory Analysis |
| Toxicology | Human Performance Forensic Toxicology<br>- General Toxicology<br>- Blood/Alcohol<br>- Blood/Drug<br>- Urine/Alcohol<br>- Urine/Drug<br>Post-Mortem Forensic Toxicology |
| Trace Evidence | Fire Debris<br>Gunshot Residue<br>Paint<br>Fibers and textiles<br>Glass<br>Hair<br>General Physical and Chemical Analysis<br>Tape<br>Lamp Filament |
| Biology | Body Fluid Identification<br>DNA Nuclear<br>Individual Characteristic Database |
| Firearms/Toolmarks | Firearms<br>Tool Marks<br>Individual Characteristic Database<br>Serial Number Restoration |
| Latent Prints | Latent Print Processing<br>Latent Print Comparison<br>Footwear/Tire Impression |
| Digital & Multimedia Evidence | Computer Forensics<br>Video Analysis |

## 2 NORMATIVE REFERENCES

The following referenced documents were utilized to prepare this manual in order to meet the ASCLD/LAB International Program requirements.

- ASCLD/LAB, Accreditation Manual, 2008. (QA Manager's Office)
- International Laboratory Accreditation Cooperation (ILAC), ILAC Guide 19 – Guidelines for Forensic Science Laboratories, 2002. (Qualtrax)
- International Vocabulary of Metrology- Basic and General Concepts and Associated Terms (VIM), 2008. (Qualtrax)
- International Organization for Standardization/International Electrotechnical Commission (ISO/IEC):
  - ISO/IEC 9000 – Quality management systems – Fundamentals and vocabulary, 2000. (Qualtrax)
  - ISO/IEC 17025 – General requirements for the competence of testing and calibration laboratories, 2005. (Qualtrax)
- AR §12-12-301 (Qualtrax)
- AR §12-12-312 (Qualtrax)

# 3 TERMS AND DEFINITIONS

The following list identifies words utilized in this manual. These definitions are also located in the appropriate section where applied.

**ADJUSTMENT**

The process performed to correct the measurement system in order to meet the required specifications.

**ADMINISTRATIVE SAMPLING**

An application of *sample selection* in which samples are selected for testing to meet statutory guidelines.

**APPROVAL AUTHORITY**

Personnel that are authorized to approve controlled documents.

**CALIBRATION**

A process which establishes a relation between the instrument/equipment values with the reference standard or material. *Examples: calibration of micropipettes and balances to a NIST traceable standard by an outside vendor.*

**CALIBRATIONS**

A specified procedure with established measurement uncertainty, that is a series of measurements establishing the response of a known reference and then comparing the response of the item being calibrated.

**CHAIN OF CALIBRATIONS**

Each reference standard or reference material having a higher-order calibration as you proceed up the hierarchy or chain of traceability.

**CHEMICAL**

A substance or compound that is used for its constant chemical composition and characteristic properties.

*Examples: Acid/Basic solutions, Davidow*

**CONTRACT**

Is the agreement between the laboratory and the customer.

*Example: The submission sheet is accepted by the ASCL and customer.*

**CONTROL**
A substance or compound that is utilized to ensure that a method and/or instrument is working as expected.
*Examples: Positive and Negative Controls*

**CONTROLLED DOCUMENT**
A document that is distributed in a manner that ensures that the recipients of controlled copies receive subsequent revisions and replace previous controlled copies. Examples of controlled documents includes: forms required for use by management; Quality and Training Manuals; administrative policies; organizational charts.

**DOCUMENT**
Information in any medium including, but not limited to, paper copy, computer disk or tape, audio or videotape, photograph, overhead, or photographic slide.

**DOCUMENT CONTROL**
The process for ensuring that controlled documents, including revisions, are reviewed, approved and released by authorized personnel, and distributed to personnel performing the prescribed activities. In addition, document control ensures that the current revision is readily available for use and archive copies are stored appropriately.

**ISSUING AUTHORITY**
Personnel that are authorized to publish the approved controlled documents.

**LABORATORY-DEVELOPED METHODS**
Are modifications of standard methods for a specific laboratory purpose. Laboratory-Developed Methods must be validated and a performance verification completed prior to use in casework.

**NON-STANDARD METHODS**
Are methods or procedures that are developed to meet a forensic need not covered by Standard Methods.

**MEASUREMENT**
Process of experimentally obtaining one or more quantity values that can reasonably be attributed to a quantity.

**PERFORMANCE VERIFICATION**
Confirmation that performance requirements of a measuring system are achieved.
*Examples: balances, internal IR polystyrene compared to a known polystyrene reference to confirm that the instrument/equipment is fit for service.*

**QUALITY RECORDS**
Quality records include any documents that provide documented support to the conformity to the quality management system. Labwide records include, but are not limited to, reports from internal audits, controlled document review and approval, management reviews as well as records of corrective and preventive actions. Discipline specific records include, but are not limited to, method and equipment verification records, reagent and chemical QC logs, training records, proficiency and competency test records, courtroom testimony monitoring records, chemical inventory records, reference collection records and audit records.

**REAGENT**
A substance or compound that is added to a system in order to bring about a chemical reaction or is added to see if a reaction occurs.
*Examples: Marquis, Duquenois-Levine, Ninhydrin, Phenolphthalein, Sodium Rhodizonate Solution*

**RECORD**
Document that states results and provides documented support of activities performed. These records include, but are not limited to, equipment logs, reagent and chemical QC logs, analytical worksheets, training logs, proficiency and competency test logs, courtroom testimony monitoring logs and corrective action requests.

**REFERENCE**
Either a reference standard or a reference material (may also be referred to as a measurement standard).

**REFERENCE MATERIAL**
A material that is traceable and normally accompanied by documenation issued by an authoritative body that is used for the calibration, performance verification or adjustment of measurement devices.
*Examples: drug standards, chemicals such as PFTBA for autotuning the GCMS.*

**REFERENCE STANDARD**
A standard that is traceable through calibration of other measurement standards and is used for the calibration, performance verification or adjustment of other measurement devices.
*Examples: NIST traceable weights and rulers*

**REQUEST**
Is the process utilized by a customer when seeking analysis by the laboratory.
*Example: This occurs when the customer completes an evidence submission sheet and provides associated evidence to the ASCL.*

**SAMPLING**
Taking a part of a substance, material or product for testing in order to reach a conclusion, make an inference about, and report on the whole. Sampling shall only be used when there is a reasonable assumption of homogeneity of the whole. Example: Testing an amount of white powder and reporting the results for the whole sample.

**SAMPLING PLAN**
For an item that consists of a multi-unit population (e.g., tablets, baggies, bindles), a sampling plan is a statistically valid approach to determine the number of sub-items that must be tested in order to make an inference about the whole population.

**SAMPLING PROCEDURE**
A defined procedure used to collect a sample or samples from the larger whole, to ensure that the value obtained in the analysis is representative of the whole. The sampling procedure may include details about size and number of sample(s) to be collected, locations from which to collect the sample(s), and a method to ensure the homogeneity of the larger whole (or to make it so.).

**SAMPLE SELECTION**
A practice of selecting items to test, or portions of items to test, based on training, experience and competence. Sample selection answers questions only about the portion tested. There is no assumption of homogeneity of the whole. Example: Pair of pants with four stains- one stain is chosen to be tested based on the analyst's experience.

**STANDARD METHODS**
Are methods published in international, regional or national standards or by reputable technical organizations, or in relevant scientific texts or journals, or as specified by the manufacturer of the equipment.

**TECHNICAL RECORDS**
Technical records (i.e. case records) include all examination and administrative documentation as part of individual laboratory case files.

**TENDER**
Is the laboratory's response to the customer regarding their request.
*Example: This occurs when the ASCL initials the receipt of evidence on the submission sheet and enters the case information into LIMS.*

**TRACEABILITY**
Property of a measurement result whereby the result can be related to a reference through a documented unbroken chain of calibrations, each contributing to the measurement uncertainty.

**UNCONTROLLED COPY**
A copy of a controlled document provided for informational purposes only. Examples include copies provided to external inspectors or copies required for legal discovery.

# 4 MANAGEMENT REQUIREMENTS

## 4.1 ORGANIZATION

### 4.1.1 Laboratory Establishment

Act 517 of 1977 established the Arkansas State Crime Laboratory (ASCL) (AR §12-12-301).

### 4.1.2 Laboratory Accreditation

It is the responsibility of the ASCL to carry out its testing in such a way as to meet the requirements of the ASCLD/LAB International Accreditation Program and to satisfy the needs of the customer, criminal justice community and others as authorized by law.

### 4.1.3 Laboratory Facilities

The management system shall cover work carried out in the ASCL – Little Rock and Hope laboratories as well as sites away from these facilities.

### 4.1.4 Laboratory Status

The ASCL is an independent State agency. The Governor of Arkansas is responsible for approving our biennial budget and providing funding accordingly.



#### 4.1.4.1 Personnel Qualifications, Authorities and Responsibilities

***Executive Director***

**Qualification**

The Governor of the State appoints the ASCL Executive Director. The ASCL Board shall prescribe the duties, responsibilities, compensation, and qualifications for the Executive Director.

**Authorities & Responsibilities**

4.1.4.1.1 The Executive Director has the overall authority and responsibility to make and enforce decisions. The Executive Director:

1. Provides administrative oversight for the operation of the laboratory through executive and legislative direction.
2. Provides daily oversight of operations and financial status of biennial budget.
3. Acts as liaison between the Criminal Justice System and laboratory.
4. Maintains relationship with statewide media.
5. Serves on Alcohol and Drug Abuse Coordinating Council and the Integrated Justice Information System Program by statute.

*Scientific Operations Director*

**Qualification**

The position requires a minimum of a Baccalaureate degree in one (1) of the physical sciences with a minimum of five years' experience in a forensic laboratory. A master's degree can substitute for two (2) years of experience in a forensic laboratory.

**Authorities & Responsibilities**

1. Oversees all analytical sections of laboratory.
2. Assists with purchasing equipment and supplies for laboratory.
3. Assists with inventory of supplies and equipment.
4. Oversees new hires for all analytical sections of the laboratory.
5. Provides administrative assistance to Executive Director with budgeting for laboratory personnel, equipment and supplies.
6. Supervises the Section Chiefs for Forensic DNA, CODIS, Forensic Chemistry, Forensic Chemistry- Illicit Labs, Forensic Toxicology, Physical Evidence, Latent Prints, Firearms/Tool Marks, and Digital Evidence.

*Assistant Director*

**Qualification**

The Executive Director of the State Crime Laboratory appoints the Assistant Director.

**Authorities & Responsibilities**

1. Oversees all construction, renovation, remodeling of laboratory.
2. Assists with payroll, timekeeping and personnel administration.
3. Assists with purchasing, invoice payment, and in the preparation of professional service contracts.
4. Manages all paper records maintained by laboratory.
5. Acts as a liaison between laboratory and other state agencies for contract services (janitorial, security, security guards, and waste hauling).
6. Acts as a liaison with public utilities.
7. Assists with state budget preparation.
8. Assists with IT plan.
9. Maintains all vehicle records and reports.

*Quality Assurance Manager*

**Qualification**

The position requires a minimum of a Baccalaureate degree in one (1) of the physical sciences with a minimum of five years' experience in a forensic laboratory. A master's degree can substitute for two (2) years of experience in a forensic laboratory.

**Authorities & Responsibilities**

1. Maintains and updates the labwide quality manual.
2. Monitors laboratory practices to verify continuing compliance with policies and procedures.
3. Evaluates instrument calibration and maintenance records. Periodically assesses the adequacy of report review activities.
4. Ensures the validation of new technical procedures.
5. Investigates technical problems, proposes remedial action, and verifies implementation.
6. Administers proficiency tests and evaluates results.
7. Selects, trains, and evaluates internal auditors. Schedules and coordinates quality system audits.
8. Ensures that training records of laboratory personnel are maintained.
9. Recommends training to improve the quality of laboratory staff.
10. Proposes corrections and improvements in the quality system.
11. Ensures compliance with the ASCLD/LAB accreditation standards.
12. Writes or assists with grant proposals; maintain budget, payouts, and equipment purchases for such grants.



***Health and Safety Manager***

**Qualification**

The State Crime Laboratory Executive Director appoints the Health and Safety Manager.

**Authorities & Responsibilities**

1. Affects a standardized safety program within the laboratory by coordinating the educational and supervisory activities related to it by providing educational materials.
2. Assisting the supervisors in teaching safety rules regulations and procedures to their employees.
3. Conducts safety surveys and ensures that proper practices and procedures are being followed.
4. Reviews and evaluates the effectiveness of the safety manual in conjunction with the Section Safety Officers.
5. Recommends and implements changes in safety rules, regulations and procedures to the Executive Director; assist supervisors in resolving safety incidents and maintain records of such incidents.
6. Communicates with R.N. for administration of immunizations for employees and maintenance of inoculation record of employees.

7. Monitors the procurement, use, and disposal of chemicals used in the lab.
8. Maintains auditing procedures; help project directors develop precautions and adequate facilities.
9. Maintains a current copy of all MSDSs; provide regular, documented formal chemical hygiene and housekeeping inspections including routine inspections of emergency equipment.
10. Stays abreast with the current legal requirements concerning regulated substances.
11. Seeks for ways to improve the safety program.

***Human Resources Manager***

**Qualification**

The position requires the formal education equivalent of a Baccalaureate degree in public administration, general business, or a related field; plus three years' experience in planning, research, or a related field. Other job related education and/or experience may be substituted for all or part of these basic requirements.

**Authorities & Responsibilities**

1. Provides consultation and information to agency management and employees regarding personnel matters such as grievances, discipline, classification and compensation issues, staffing, legal requirements, career counseling, and salary administration.
2. Conducts personnel and salary surveys or special studies, prepare reports, proposals and correspondence pertaining to personnel matters.
3. Evaluates the need for personnel policy or program changes by monitoring changing legal requirements and reviewing data and management reports to detect problem areas.
4. Assists with the asset management portion of the statewide system.
5. Maintains all personnel records for the agency.
6. Maintains all leave records for the agency.
7. Performs payroll functions to ensure accuracy of records and disbursements.
8. Ensures supervisory training.
9. Reviews performance evaluations for accuracy and completeness.

***Fiscal Officer***

**Qualification**

The position requires a minimum of a Baccalaureate degree in accounting with a minimum of five years' experience as an accountant. A master's degree can substitute for two (2) years' experience.

**Authorities & Responsibilities**

1. Establishes procedures for receipt, processing, and deposit of funds for autopsy reports; depositions; witness fees; FAA autopsies; copies of photographs, laboratory reports or slides; and all other funds received by the ASCL.
2. Reconciles all bank accounts.
3. Establishes and implements agency procedures for compliance with all accounting laws and regulations.
4. Prepares annual financial reports.
5. Assists Director with preparation of biennial personnel budget including advising on proper classification of positions.
6. Assists the Executive Director, Assistant Director and Scientific Operations Director in advertising vacancies and recruiting applicants.
7. Provides accounting for all Federal Grants.
8. Maintains all records concerning the ASCL Board.
9. Accesses Arkansas Administrative Statewide Information System to reconcile agency funds and funding.
10. Participates with other agency management in the development and implementation of departmental policies and programs.
11. Advises director regarding agency's financial status, program priorities, changes in laws or regulations, and other factors affecting the department's overall operation.



***Chief Forensic Pathologist (State Medical Examiner)***

**Qualification**

The Executive Director with the approval of the State Crime Laboratory Board shall appoint and employ the Chief Forensic Pathologist. State Statute 12-12-307 lists the Qualifications for the position. The State Crime Laboratory Board has further required the following qualifications: must obtain a license to practice medicine in the State of Arkansas, have a minimum of five years' experience in the field of forensic pathology, and be Board Certified in Forensic Pathology by the American Board of Pathology.

**Authorities & Responsibilities**

1. Responsible for the overall planning and day to day operations of forensic pathology, involving medico-legal investigations using laboratory and medical procedures to determine the cause, manner and mechanism of death as prescribed by Arkansas Code.
2. Work involves thorough postmortem examinations, certifications of the cause, manner, and mechanism of death; consultations with toxicologists, criminalists, physicians and law enforcement officers to establish medical evidence and to obtain expert opinions regarding unexplained deaths.

3. The Medical Examiner testifies as an expert witness to provide information concerning findings, evaluations, and autopsy results in accordance with State and Federal law.
4. Develops and supervises in-service training for Medical Examiner staff and other laboratory personnel to insure qualify performance within the Medical Examiner section and the Laboratory.
5. Provides consultation and recommendation to the Executive Director of the Laboratory for administrative or legislative changes needed to improve the delivery of services provided to the public.
6. Responsible for maintaining the necessary records required for the Medical Examiner Section.

***Hope Regional Laboratory Director***

**Qualification**

The position requires a minimum of a Baccalaureate degree in one (1) of the physical sciences with a minimum of three years' experience in a forensic laboratory. A master's degree can substitute for two (2) years of experience in a forensic laboratory.

**Authorities & Responsibilities**

1. Manages the work and personnel of the Hope Regional Laboratory by ensuring that work is completed timely and accurately, personnel are trained and developed, employees are informed and productive, needs of customers and employees are met, supplies are adequate, equipment is operational.
2. Coordinates with the Scientific Operations Director, Purchasing, Quality Assurance and Health & Safety Managers to ensure that the laboratory adheres to all prescribed quality assurance, safety, and security standards as well as technical protocols and agency policy.



***Other Staff***

Qualifications, authorities and responsibilities for Section Chiefs and analysts are included in each Discipline Quality Manual.

Technical Support staff may be utilized to perform duties in a discipline even though they may not have the educational qualifications to be an analyst in the discipline. Technical support job descriptions and duties performed will be in agreement with one another. Job descriptions will be kept in their Employee History Binder. Technical Support must have knowledge of techniques and methods used in their assigned tasks. All data generated by technical support must be interpreted by an experienced and degreed analyst.

### 4.1.5 Laboratory Responsibilities

The ASCL shall:

a) Have managerial and technical personnel who, irrespective of other responsibilities, have the authority and resources needed to carry out their duties, including the implementation, maintenance and improvement of the management system, and to identify the occurrence of departures from the management system or from the procedures for performing tests, and to initiate actions to prevent or minimize such departures.

b) Strive to ensure there is no influence on the professional judgments of employees working cases. The following policies/arrangements are in place in an attempt to insulate the staff from financial, personal, or other pressures that may affect their work.

- The Arkansas State Legislature sets the annual budget for state agencies. A budget is appropriated to each section based on planning needs and what is allocated from the legislature. The ASCL Fiscal Officer is the point of contact for the ASCL on all budget matters with the state.
- The ASCL prepares, in accordance with State of Arkansas personnel policy, performance expectations for each employee outlining the job expectations for the coming year. Managers evaluate each employee on their individual performance as compared with their individual expectations.
- The *ASCL Personnel Handbook* (ASCL-DOC-02), Section 2.1, contains specific guidelines on the acceptance of gifts or gratuities.
- Managers have the responsibility and authority to receive and take action on employee concerns within their discipline. The *ASCL Personnel Handbook* (ASCL-DOC-02), Section 2.4 Grievance Procedure, has provisions for employee grievances that cannot be resolved at the manager level.
- All cases may be prioritized based upon a system that allows for a timely response. Unless priority requests are made, cases should be analyzed in chronological order. Priority may be made for the following reasons:
  - Investigating Officer request
  - Court Official request (including court dates and court orders)
  - Threat to public safety (homicides, rapes, violent crimes, etc.)

  Other cases or types of cases may be prioritized at the request of the Section Chief, Scientific Operations Director, Medical Examiner or the Executive

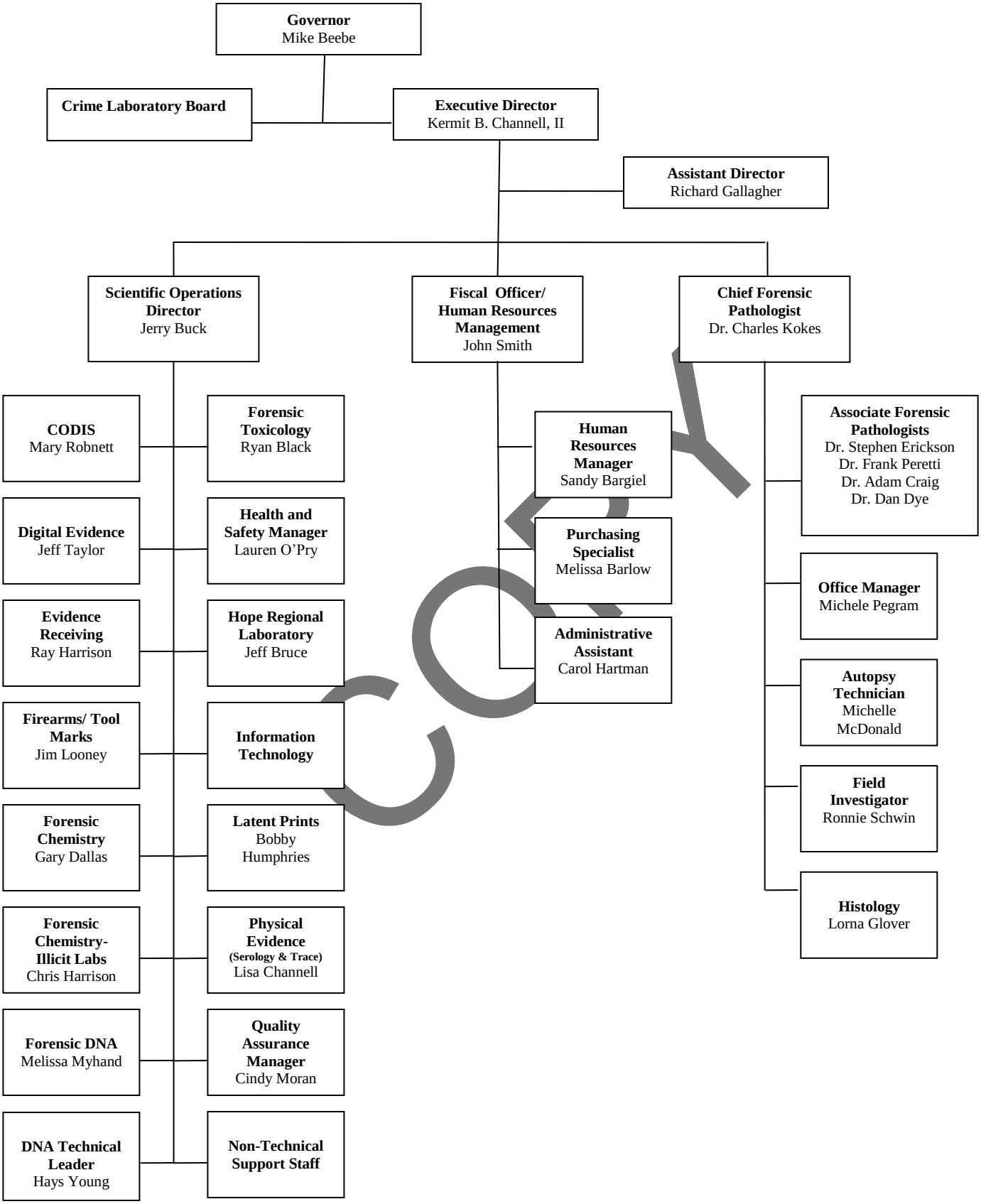
Director. All priority requests will be documented in the LIM system under the 'Request Tab' with a brief description of the prioritization request.

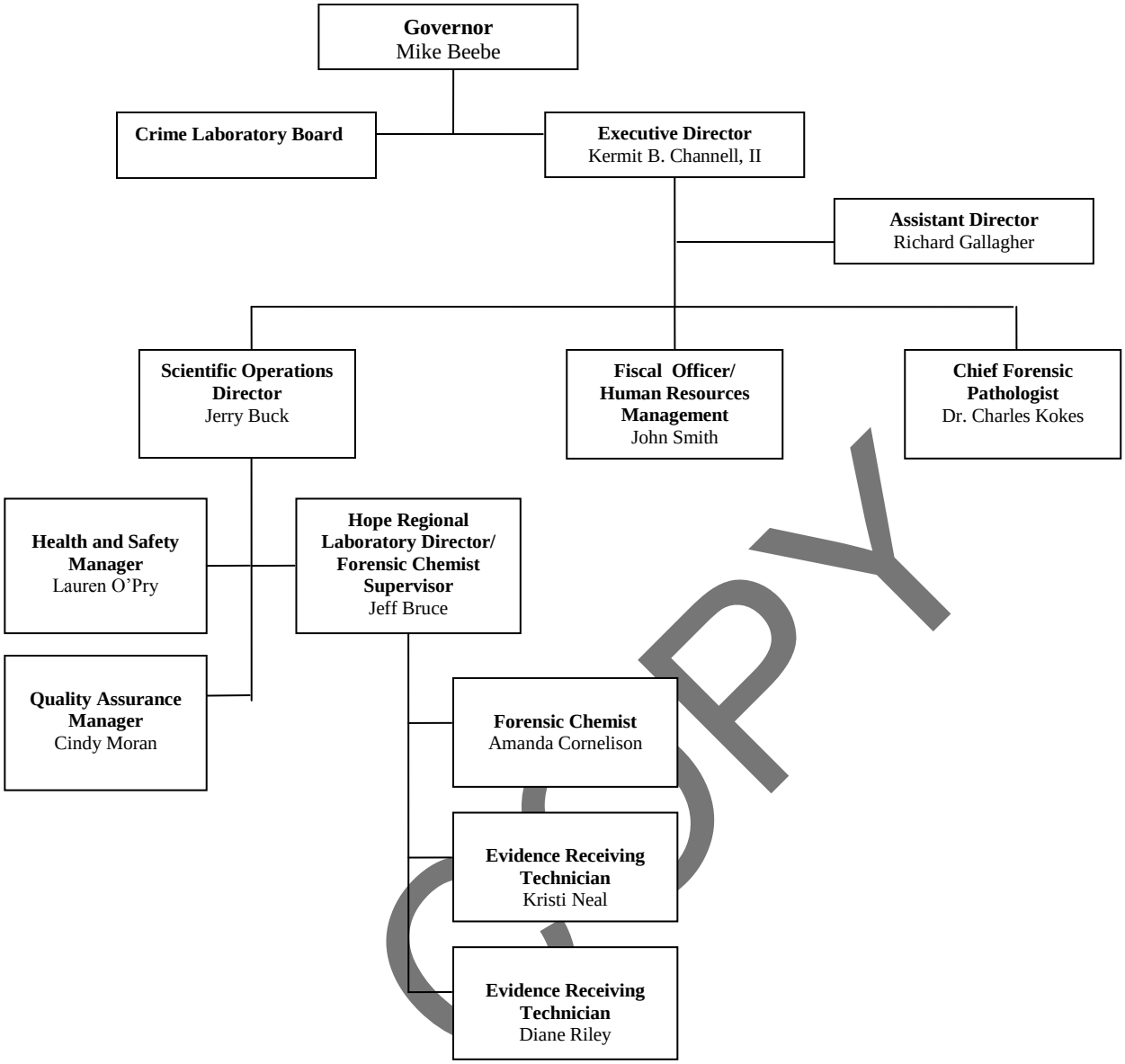
- The ASCL has a *Code of Ethics Policy* (ASCL-DOC-06) covering these issues, which must be read annually by all personnel.

c) Have policies and procedures (see section 4.13.1.3) to ensure the protection of its customers' confidential information, including procedures for protecting the electronic storage and transmission of results. All employees are required to keep confidential all information obtained in their official capacities. Except where legally authorized, employees will not disclose any confidential information. Every employee has the responsibility to safeguard all confidential information obtained in his or her official capacity from unauthorized distribution.

d) Have policies and procedures (*ASCL Code of Ethics Policy* ASCL-DOC-06) to avoid involvement in any activities that would diminish confidence in its competence, impartiality, judgment or operational integrity;

e) Define the organization and management structure of the laboratory and the relationships between quality management, technical operations and support services. See the organizational chart below.


Governor
Mike Beebe
Crime Laboratory Board
Executive Director
Kermit B. Channell, II
Assistant Director
Richard Gallagher
Scientific Operations Director
Jerry Buck
Fiscal Officer/ Human Resources Management
John Smith
Chief Forensic Pathologist
Dr. Charles Kokes
CODIS
Mary Robnett
Digital Evidence
Jeff Taylor
Evidence Receiving
Ray Harrison
Firearms/ Tool Marks
Jim Looney
Forensic Chemistry
Gary Dallas
Forensic Chemistry- Illicit Labs
Chris Harrison
Forensic DNA
Melissa Myhand
DNA Technical Leader
Hays Young
Forensic Toxicology
Ryan Black
Health and Safety Manager
Lauren O'Pry
Hope Regional Laboratory
Jeff Bruce
Information Technology
Latent Prints
Bobby Humphries
Physical Evidence (Serology & Trace)
Lisa Channell
Quality Assurance Manager
Cindy Moran
Non-Technical Support Staff
Human Resources Manager
Sandy Bargiel
Purchasing Specialist
Melissa Barlow
Administrative Assistant
Carol Hartman
Associate Forensic Pathologists
Dr. Stephen Erickson
Dr. Frank Peretti
Dr. Adam Craig
Dr. Dan Dye
Office Manager
Michele Pegram
Autopsy Technician
Michelle McDonald
Field Investigator
Ronnie Schwin
Histology
Lorna Glover






f) Specify the responsibility, authority and interrelationships of all personnel who manage, perform or verify work affecting the quality of the tests. Qualifications and job descriptions for Section Chiefs and analysts are included in each Discipline Quality Manual. 4.1.5.f.1 Each subordinate shall be accountable to only one immediate supervisor for each category of testing.

g) Have adequate personnel for supervising testing, including trainees, by individuals familiar with the methods and procedures, the purpose of each test, and with the assessment of the test results.

h) Have a Section Chief in each discipline who has overall responsibility for the technical operations and the provision of the resources needed to ensure the required quality of laboratory operations. Each Section Chief or designee will have the appropriate technical training and technical experience in the discipline. In addition, the Scientific Operations Director oversees each Section Chief and their discipline (*ASCLD/LAB Supplemental Requirements* 4.1.5.h.1).

i) Have a QA Manager who has defined responsibilities and authority (see Section 4.1.4.1) for ensuring that the management system related to quality is implemented and followed at all times. The QA Manager shall have direct access to the highest level of management at which decisions are made on laboratory policy or resources.

j) Appoint deputies for key management personnel when the individual will be absent for 3 days or longer. All affected personnel shall be notified.

k) Ensure that employees are aware of the relevance and importance of their activities and how they contribute to the achievement of the objectives of the management system. This is accomplished through effective communication from top management to all employees.



**4.1.6 Communication**

ASCL methods of communication include regular Section Chief meetings, Discipline meetings, email, telephone, and personal meetings. Managers will determine the appropriate means of conveying information concerning the quality system.

**4.1.7 Health and Safety**

The ASCL has a Health and Safety Manager with defined responsibility and authority (see Section 4.1.4.1) for ensuring that the health and safety program, which is documented in the Health and Safety Manual (ASCL-DOC-08), is implement and followed at all times.

**4.1.8 Management**

Key Management personnel include the Scientific Operations Director, Chief Medical Examiner, Section Chiefs and the DNA Technical Leader. Top Management personnel

include the Executive Director, Assistant Director, Scientific Operations Director, QA Manager and the Fiscal Officer.

## 4.2 MANAGEMENT SYSTEM

### 4.2.1 ASCL Quality Manual

The ASCL Quality Manual (ASCL-DOC-01) is a compilation of policies and procedures for use in ASCL operations. The Quality Manual is readily available on Qualtrax to all ASCL personnel. ASCL personnel are responsible for familiarizing themselves with and utilizing these policies and procedures. The quality manual is reviewed annually by the QA Manager, Scientific Operations Director and Executive Director and updated as needed to reflect changing organizational, technical and procedural information.

Unforeseen circumstances may arise which require immediate deviations from the policies and procedures of this manual. In such situations, the request for exceptions to policy will be submitted in writing to the Scientific Operations Director, or designee, of the laboratory. The request must include an adequate description of the circumstances requiring the action, a statement of the proposed alternative policy and procedure, and the intended duration of the exception. The Scientific Operations Director will maintain documentation of the approved policy exception.

In addition, each discipline of the laboratory will have a Discipline Quality Manual and Training Manual. The intent of these manuals is:

- To promote the efficient and effective operation of the ASCL
- To assist the laboratory staff in performing their assigned duties and tasks
- To state the policies and procedures established by the disciplines

Personnel are responsible for familiarizing themselves and utilizing their Discipline Quality Manual. These manuals are reviewed annually by the appropriate Section Chief and updated as needed.



### 4.2.2 Mission and Quality Policy Statement

The mission of the Arkansas State Crime Laboratory is to provide the highest quality scientific services and resources to the criminal justice community in a timely manner in the disciplines of CODIS, Digital Evidence, Firearms/Tool Marks, Forensic Chemistry, Forensic Chemistry- Illicit Labs, Forensic DNA, Forensic Toxicology, Latent Prints, Physical Evidence and the Medical Examiner's Office.

The objectives of the Arkansas State Crime Laboratory are the following:

- Employing a team of skilled and dedicated employees
- Providing a suitable work environment
- Utilizing innovate programs and state of the art instrumentation and technology
- Maintaining accreditation through ASCLD/LAB and NAME

The missions for the respective disciplines are:

**CODIS**
Process all convicted offender samples and felony arrestee (Capital Murder, Murder in the 1st, Kidnapping, Rape, 1st and 2nd degree Sexual Assault) samples utilizing DNA technology to input into the **N**ational **D**NA **I**ndex **S**ystem (NDIS). Convicted offender samples as well as casework samples are searched locally in the **S**tate **D**NA **I**ndex **S**ystem (SDIS) and on the national level to help solve criminal cases.

**Digital Evidence**
The Digital Evidence section is responsible for analyzing computers, digital storage devices, video evidence, and questioned counterfeit documents for the criminal justice system. This may include systematic retrieval of digital data that may be of evidentiary value, video tape recovery and enhancement as well as technical support to law enforcement agencies. This analysis is performed in a chain-of-custody environment using validated and appropriate procedures in order to ensure the most accurate and relevant analytical results.

**Firearms/Tool Marks**
Perform examinations which include the following: the comparison of bullets, cartridge cases and shot shells with suspect weapons; the comparison of tool marks with suspect tools; firearm function testing; distance determination; restoration of obliterated serial numbers; image cartridge cases and bullets into the National Integrated Ballistics Information Network (NIBIN).

**Forensic Chemistry**
Utilize various scientific methodologies and instrumentation to perform analyses to identify controlled substances. Included are drugs of abuse controlled under Act 590 of 1971 and addenda thereafter.

**Forensic Chemistry- Illicit Labs**
Utilize various scientific methodologies and instrumentation to perform analyses to identify controlled substances. Included are drugs of abuse controlled under Act 590 of 1971 and addenda thereafter. Illicit laboratory chemists also assist law enforcement agencies to dismantle suspected illicit laboratories, collect representative samples of evidence, submit the samples to evidence receiving on behalf of the law enforcement agency, and analyze evidence associated with illicit laboratories.

**Forensic DNA**
Analyze biological evidence utilizing PCR technology in order to determine its source. This evidence is used to include or exclude individuals from having deposited the evidence in the commission of a criminal act.

**Forensic Toxicology**
Analyze samples from the State Medical Examiner, Law Enforcement Officers, and County Coroners. Utilize various scientific methodologies and instrumentation to perform analysis on biological specimens to determine the presence and levels of drugs and/or alcohol.

**Latent Prints/AFIS**
Develop latent fingerprints using a full range of physical, chemical and alternative light source methods and compare to prints of subjects in order to identify or eliminate. Compare footwear and tire impressions to suspect footwear and tires. Utilize the computer based Automated Fingerprint Identification System (AFIS) for searching, matching and storing fingerprints and related data.

**Physical Evidence**
***Serology-*** Utilize scientific methodologies and instrumentation to examine physical evidence for the presence of blood and/or semen. Collect and store tape lifts for the Trace Unit.
***Trace-*** Utilize scientific methodologies and instrumentation to examine physical evidence for the presence of fibers, hairs, paint, glass, tape, fire debris, lamp filaments, primer gunshot residue from suspects and physical comparisons. Perform other miscellaneous analysis when appropriate. Compare questioned samples to known samples to determine if a common origin exists.

**State Medical Examiner**
Perform post mortem examination and make a determination of the cause and manner of deaths, which become subject to the jurisdiction of the State Medical Examiner as set out in Statute 12-12-315 and shall include the general application of the medical sciences to assist the criminal justice system in the State of Arkansas.

## Quality Policy Statement

*The goal of the Arkansas State Crime Laboratory (ASCL) is to provide forensic analyses of the highest quality to our customers. The ASCL has defined its customer base as the Judicial System. This includes law enforcement agencies, prosecutors and defense council, regulatory and other public service government agencies. The ASCL is committed to meet the needs and expectations of all of our customers utilizing a philosophy of quality and service.*

*The ASCL standard of quality will require that all forensic conclusions, both written and verbal are scientifically valid, accurate, consistent, and reliable. This standard of quality will serve as the guiding principle for all technical and strategic decisions involving work undertaken by the ASCL.*

*An equal commitment to this principle is shared by all employees of the ASCL.*

*The objectives involved in meeting this quality goal are to:*

- *Maintain excellence in the quality of forensic science services provided to the Judicial System.*
- *Ensure the use of validated procedures that are reliable, reproducible and which serve their intended purpose with respect to precision, accuracy, sensitivity, and specificity*
- *Provide scientific analysis reports that are clear and accurate*
- *Provide relevant, professional and impartial testimony in judicial proceedings*
- *Participate in a proficiency-testing program that monitors the capabilities of the analysts/examiners and the reliability of our analytical results*
- *Participate in annual audits of the quality system*
- *Provide a system to ensure the integrity and security of evidence from its receipt to its return*
- *Ensure quality in every aspect of our work*
- *Ensure that the public has a quality laboratory in the State of Arkansas*
- *Comply with ASCLD/LAB International Accreditation Standards and to continually improve the effectiveness of the ASCL Quality Management System.*
- *Identify opportunities for improvement related to quality in all areas of operation, take corrective action to remediate non-conforming work, and make every effort to prevent recurrence.*

*The entire staff of the ASCL will adhere to the spirit and intent of the quality assurance program, as well as to the directives of this Quality Manual and its supporting documentation, including the Personnel Handbook, the Health and Safety Manual and the Discipline Quality and Training Manuals. All members of the staff will continue to aggressively pursue customer satisfaction for each and every one of the services provided by this laboratory.*

*I personally affirm this commitment and support the established comprehensive quality assurance system, which will allow our agency to meet all of the requirements of the ASCLD/LAB International Accreditation Standards.*

*We are committed to a strategy of continuous improvement, constantly seeking to learn the expectations of our customers and striving to meet those needs and expectations.*

*Kermit B. Channell, II*

#### 4.2.2.1 ASCLD/LAB Guiding Principles

The *ASCLD/LAB Guiding Principles of Professional Responsibility for Crime Laboratories and Forensic Scientists* has been incorporated into the *ASCL Code of Ethics Policy* (ASCL-DOC-06).

#### 4.2.2.2 Review

The *ASCL Code of Ethics Policy* (ASCL-DOC-06) is reviewed by all personnel and discussed with the individual's supervisor annually. All personnel must acknowledge that they have read and fully understand the prohibited activities and their professional ethical conduct responsibilities as an employee of the ASCL. This acknowledgement process will be tracked utilizing Qualtrax. The Human Resources Manager will keep a list of employees completing this process.

### 4.2.3 Management Commitment

Top Management is committed to developing, implementing, and continually improving the effectiveness of the management system. This is evident through management's involvement in monitoring the quality system through a variety of means, including the annual management review, internal and external audits, procedure reviews, proficiency testing, re-examination of casework and corrective/preventive action requests. The QA Manager monitors activities to improve the quality system and recommends actions needed to improve the quality system's effectiveness.



### 4.2.4 Meeting Requirements

Top Management communicates the importance of meeting customer, statutory and regulatory requirements during regular Section Chief meetings. Managers shall pass this information to their employees.

### 4.2.5 Supporting Manuals

Laboratory quality policies are included in this quality manual, which follows the same outline as the *ISO/IEC 17025* and *ASCLD/LAB Supplemental Requirements*. Quality policies and technical procedures which apply to a particular discipline are included in each Discipline Quality Manual. Discipline Quality Manuals shall not contradict this quality manual and will be outlined similarly to this manual. The DNA and CODIS Quality Manuals will be outlined similarly to the *FBI Quality Assurance Standards*.

Other supporting manuals include:

- *ASCL Personnel Handbook* (ASCL-DOC-02)- includes State, Federal and ASCL policies.

- *ASCL Health and Safety Manual* (ASCL-DOC-08) contains safety and environmental compliance policies and information.
- Discipline Training Manuals contain the training program for each discipline.

**4.2.6 Technical Management**

The roles and responsibilities of Sections Chiefs and the DNA Technical Leader, including their responsibility for ensuring compliance with the ASCLD/LAB International Requirements are provided in each Discipline Quality Manual. The Scientific Operations Director and QA Manager's responsibilities and authority is provided in Section 4.1.4.1.

**4.2.7 Integrity**

Top management will assess the impact of proposed procedural changes prior to implementation in an effort to ensure that the change does not result in contradictions or conflicts with other procedures.

## 4.3 DOCUMENT CONTROL

### 4.3.1 General

The ASCL's labwide quality manual, administrative procedures, discipline quality manuals, training manuals and quality assurance documents and forms are controlled utilizing Qualtrax software to ensure that they are adequate, approved for use, and that only the current versions of the document are in use. This section provides instructions concerning the creation, revision and distribution of these controlled documents.

**DEFINITIONS**

**DOCUMENT**

Information in any medium including, but not limited to, paper copy, computer disk or tape, audio or videotape, photograph, overhead, or photographic slide.

**DOCUMENT CONTROL**

The process for ensuring that controlled documents, including revisions, are reviewed, approved and released by authorized personnel, and distributed to personnel performing the prescribed activities. In addition, document control ensures that the current revision is readily available for use and archive copies are stored appropriately.

**CONTROLLED DOCUMENT**

A document that is distributed in a manner that ensures that the recipients of controlled copies receive subsequent revisions and replace previous controlled copies. Examples of controlled documents includes: forms required for use by management; Quality and Training Manuals; administrative policies.

**RECORD**

Document that states results and provides documented support of activities performed. These records include, but are not limited to, equipment logs, reagent and chemical QC logs, analytical worksheets, training logs, proficiency and competency test logs, courtroom testimony monitoring logs and corrective action requests.

**UNCONTROLLED COPY**

A copy of a controlled document provided for informational purposes only. Examples include copies provided to external inspectors or copies required for legal discovery.

**ISSUING AUTHORITY**
Personnel that are authorized to publish the approved controlled documents.

**APPROVAL AUTHORITY**
Personnel that are authorized to approve controlled documents.

**Controlled Document Preparation**
Internally generated documents shall be prepared by personnel with adequate expertise in the subject. The detail of the document shall be commensurate with the complexity of the activity and the background of the intended user of the document. The document must include enough detail and specificity to ensure that the activity conforms to quality specifications and/or expectations.

## 4.3.2 Controlled Document Review and Approval

**4.3.2.1**
Each new or revised internally generated controlled document is required to be reviewed and approved by appropriate personnel prior to issue. The official controlled documents and archived versions of all controlled documents will be maintained on Qualtrax.

1. **Quality Manuals** must be reviewed and approved by the QA Manager, the appropriate Section Chief, the Scientific Operations Director and Executive Director. The DNA and CODIS Quality Manuals must also be approved by the DNA Technical Leader.
2. **Personnel Handbook** must be reviewed and approved by the QA Manager, Scientific Operations Director and Executive Director.
3. **Health & Safety Manual** must be reviewed and approved by the QA Manager, Health & Safety Manager, Scientific Operations Director and Executive Director.
4. **Health & Safety Documents** must be reviewed and approved by the QA Manager, Health & Safety Manager and Scientific Operations Director.
5. **Labwide Controlled Documents** must be reviewed and approved by the QA Manager and Scientific Operations Director.
6. **Discipline Specific Controlled Documents** (see above for Quality Manuals) must be reviewed and approved by the QA Manager and the appropriate Section Chief. In the DNA and CODIS disciplines, the DNA Technical Leader must also review and approve these controlled documents.

After the review and approval process is complete, the document will be published on Qualtrax. All appropriate personnel will be notified by email and have access to the official electronic documents. Individuals may print hardcopies of internal documents as needed for personal use; however, these copies are unofficial.

A Controlled Document Ledger report will be available in Qualtrax for all controlled documents. The document's initial creation date, current revision number and the approval authority will be recorded.

**Control of External Documents**

External documents, software, or any other document in which a particular revision/version is required, will be referenced in the appropriate internally generated controlled document (i.e. Quality Manuals, Training Manuals, etc.) or as an attachment to the appropriate document. The reference must identify the current revision/version and location of the document. These documents will be available at each location where related work is conducted.

**4.3.2.2 a Document Availability**

Documents shall be available at all locations where operations essential to the effective functioning of the laboratory are performed (i.e. annex building, illicit lab scenes, etc.).

**4.3.2.2 b Review of Controlled Documents**

Controlled documents shall be reviewed at least annually (from the initial creation date or last revision date) and when necessary revised to ensure that they reflect current policies, practices and technology. With the exception of quality manuals, the Personnel Handbook and the Health and Safety Manual, documents that have been edited within the year will not require an additional review. If the document has not been edited within the year, it will require a review. This document review will be performed by the appropriate personnel and tracked in Qualtrax.

**4.3.2.2 c Archiving Controlled Documents**

Employees will destroy outdated documents upon receiving updated documents. It is the employee's responsibility to verify that they are using the current revision of any document.

**4.3.2.2 d Retired Controlled Documents**

Retired controlled documents are maintained in Qualtrax, and only supervisors have access to view these documents.

**4.3.2.3 Controlled Document Format**

Each internally generated controlled document will have the following format requirements.

Each controlled document will bear a footer on each page containing at a minimum:

1) The unique document identification
   - Documents- DISCIPLINE-DOC-##
   - Forms- DISCIPLINE-FORM-##
   - Discipline abbreviations are as follows:
     - ASCL = Labwide
     - CODIS = Combined DNA Index System
     - DE = Digital Evidence
     - DNA = Forensic DNA
     - DRG = Forensic Chemistry
     - ER = Evidence Receiving
     - FA = Firearms/Tool Marks
     - HRL_ER = Hope Regional Laboratory - Evidence Receiving
     - LP = Latent Prints
     - SER = Physical Evidence – Serology
     - TOX = Toxicology
     - TR = Physical Evidence - Trace
2) Revision date
   - The date the document is effective. The effective date will not be prior to the approval date.
3) Approval authority
4) Page _ of _



## 4.3.3 Document Changes

**4.3.3.1** Revised documents are subject to the same review, approval, documentation and issuance requirements of the original document as stated above.

**4.3.3.2** When a controlled document is revised, the editor of the document must give a general summary of the changes made in Qualtrax. The Document Compare feature in Qualtrax allows the user of the document to see any deletions, additions and changes to the document.

**4.3.3.3** All changes, even minor changes, to any controlled document require a revision to the document.

**4.3.3.4** There are two ways to revise documents- directly in Qualtrax utilizing the

Qualtrax system or outside of Qualtrax with the revised document imported into Qualtrax to replace the current document. Both methods maintain the original document, the revised document, and show the changes made to the document in the Qualtrax system. The Qualtrax system tracks who made the revision, the reviewers and approvers, as well as who was notified of the revision.

**Responsibilities**

The Preparer of the document is responsible for:

- Preparing the document in the proper format.
- Addressing or resolving comments from reviewers.
- Submitting the document in Qualtrax.

The Section Chief and Technical Leader (if applicable) are responsible for:

- Ensuring that reviews are completed annually on all documents in their section.
- Reviewing and approving all discipline specific controlled documents.
- Ensuring that the documents are scientifically suitable for issue.
- Ensuring that the documents contain the required quality assurance elements (i.e., QC, measurement of uncertainty, traceability)

The QA Manager is responsible for:

- Ensuring that all documents meet QA requirements as outlined in the ASCLD/LAB International accreditation standards.
- Ensuring the annual review of Quality and Training Manuals by appropriate Section Chiefs and the Technical Leader (if applicable) to determine if a revision is needed.
- Maintaining the official electronic controlled documents on Qualtrax.
- Properly issuing and distributing documents through Qualtrax.
- Maintaining review documentation in Qualtrax.
- Reviewing and approving all controlled documents.
- Issuing all controlled documents and ensuring all appropriate employees are notified of new or revised documents.
- Updating the uncontrolled version of documents on the ASCL website.

The Scientific Operations Director is responsible for:

- Approving all Quality Manuals, Health and Safety Manual, Personnel Handbook and Labwide Controlled Documents.

The Executive Director is responsible for:

- Approving all Quality Manuals, Health and Safety Manual and Personnel Handbook.

## 4.4 REVIEW OF REQUESTS, TENDERS, AND CONTRACTS

**DEFINITIONS**

**REQUEST**

Is the process utilized by a customer when seeking analysis by the laboratory.
***Example: This occurs when the customer completes an evidence submission sheet and provides associated evidence to the ASCL.***

**TENDER**

Is the laboratory's response to the customer regarding their request.
***Example: This occurs when the ASCL initials the receipt of evidence on the submission sheet and enters the case information into LIMS.***

**CONTRACT**

Is the agreement between the laboratory and the customer.
***Example: The submission sheet is accepted by the ASCL and customer.***



### 4.4.1 General

The ASCL strives to provide its customers with information regarding ASCL services and the testing that is available through various means: presentations at law enforcement and prosecutor meetings, publications, training courses provided to law enforcement and the ASCL website. Once accepted by the laboratory, any request for service submitted by a customer agency, either verbal or in writing, serves as a contract for service employing testing methods as described in each Discipline Quality Manual. The *ASCL Evidence Submission Form* (ASCL-FORM-12_WD or ASCL-FORM-63) shall normally be utilized to record the request, tender and contract with the customer.

Any difference between the request or tender and the contract shall be resolved before any work commences. Each contract shall be acceptable both to the ASCL and the customer.

By completing and submitting the submission sheet, the customer relinquishes all decisions regarding analytical processing and choice of methods to the ASCL.

### 4.4.2 Review of Requests

Within the case file, the laboratory maintains records related to the customer request, including the *ASCL Evidence Submission Form* (ASCL-FORM-12WD or ASCL-FORM-63) and case-related discussions with the customer documented on an *Agency Contact Form*

(ASCL-FORM-06), e-mail, or equivalent document. The initial review of the customer's request is conducted by Evidence Technicians to determine if it appears within the scope of normal laboratory services. Upon determining this, the Evidence Technician will accept the evidence and initial and date the ASCL Evidence Submission Form. The Evidence Technician then enters the request into the LIMS and routes it to the appropriate discipline.

Requests for non-routine work must be reviewed by the appropriate Section Chief. The Section Chief must initial and date the ASCL Evidence Submission Form next to the request.

The Medical Examiner Section is considered an internal customer. The reviews of requests, tenders and contracts may be performed in a more simplified way as detailed in the appropriate Discipline Quality Manual.

**4.4.3 Subcontracted Work**

Occasionally the ASCL will find it necessary to transfer evidence to an outside laboratory for testing. This decision will generally be made by the affected discipline. This decision may occur after a review of the contract or it may be discovered during the testing process. Documentation stating the reason the evidence will be subcontracted will be in the case record.

**4.4.4 Deviations**

When the customer agrees to the contract, the customer agrees that the ASCL may make deviations as deemed necessary. However, the customer will be notified (e.g. iResults, phone call, e-mail, etc.) if a deviation is needed.

**4.4.5 Amendments**

If the contract needs to be amended after work has begun, the contract shall be reviewed as stated above by the discipline making the amendment, and all affected personnel shall be notified.

## 4.5 SUBCONTRACTING OF TESTS AND CALIBRATIONS

### 4.5.1 General

If the Arkansas State Crime Laboratory finds it necessary to transfer evidence to an outside laboratory (e.g. FBI, NMS), an *Inter-Laboratory Evidence Transfer Form* (see ASCL-FORM-07) must be completed and entered into the case file. The *Inter-Laboratory Evidence Form* may be waived for items funded out of a grant and/or items under a contract. Any cost incurred by the laboratory must be approved by the Fiscal Officer.

Any external laboratory that is to perform casework for the Arkansas State Crime Laboratory (whether contracted or not) must be an accredited laboratory. This accreditation must be from an accrediting body that is recognized by the Arkansas State Crime Laboratory. These laboratories must provide the Arkansas State Crime Laboratory with a Certification of Accreditation.

See Section 5.6.2.1 for external calibration laboratory requirements.

### 4.5.2 Subcontractor Approval

By completing and submitting the submission sheet, the customer agrees to any subcontracting arrangement the ASCL deems necessary. The customer will be notified in writing (email, iResults, etc.) if testing will be subcontracted. If there will be a cost incurred to the customer, the customer must approve of the arrangement. This must be documented and placed in the case file.

### 4.5.3 Subcontractor Responsibility

The ASCL is responsible to the customer for the work of the subcontractor, except in the case where the customer or a regulatory authority specifies which subcontractor is to be used.

### 4.5.4 Subcontractor Competency

The Quality Assurance Manager maintains a register of all subcontractors used for testing and/or calibrations and maintains documentation of their competency and compliance as described in section 4.5.1.

## 4.6 PURCHASING SERVICES AND SUPPLIES

### 4.6.1 General

The *ASCL Procurement Policies and Procedures* (ASCL-DOC-07) specifies policies and procedures for the purchase, reception and storage of materials relevant for the tests. When the material or service must meet certain specifications in order to correctly perform the testing, these items and their specifications (i.e. manufacturer, type, grade or other technical data relevant to the supply or service) must be defined in the Discipline Quality Manual, purchasing documents or a discipline document.

### 4.6.2 Inspection and Verification of Supplies Received

Supplies, reagents and consumable materials that affect the quality of tests are not used until they have been inspected or otherwise verified as being in compliance with specifications defined in the Discipline Quality Manual, purchasing documents or a discipline document.

The Procurement Section inspects all materials received to ensure agreement with what was ordered. Inconsistencies will be reconciled before materials are dispersed to the appropriate section and utilized in casework. The appropriate Section Chief or designee will verify (if applicable) that the materials meet the required specifications. This approval will be documented in Qualtrax in the External Supply Request workflow.

Chemicals and reagents are to be initialed and dated with "Received Date" by Procurement staff. As chemicals and reagents are requested, the analysts are responsible for initialing and dating containers with "Open Date". Supplies, reagents and consumable materials shall be stored in accordance with the manufacturer's recommendations.



### 4.6.3 Purchasing Documents

The Qualtrax External Supply Workflow shall be completed for all items to be purchased. Alternate forms may be used with permission from the Procurement Section. The following information shall be provided: Vendor Name, Date, Part Number (if known), Description, Quantity, Price, Total and Justification. The description shall define specifically the item being requested including type, class, grade, precise identification and other technical data, when appropriate. The approval of the Section Chief, Scientific Operations Director, and Fiscal Officer are necessary.

### 4.6.4 Vendor Evaluation

Critical consumables, supplies, and services which affect the quality of testing will be obtained from reliable suppliers. Discipline Quality Manuals shall contain a list critical

supplies which affect the quality of testing and calibration, if applicable. The following process will be used to evaluate suppliers to determine the reliability of services and/or supplies they provide.

- Critical Consumable materials, whenever possible, are obtained from a source that has a minimum of ISO 9000 accreditation.
- Calibration and Testing services and supplies, whenever possible, is obtained from vendors accredited to ISO/IEC 17025 or from vendors which meet nationally certified standards (for calibration services refer to Section 5.6.2.1; for subcontracting of testing refer to Section 4.5.1).
- Whenever a source is used that does not meet any of the above criteria, the source is evaluated for meeting the intent of ISO/IEC 17025. This may be done by obtaining documentation of the QA program/protocol or by completing a Vendor Evaluation Form (ASCL-FORM-61).

A list of approved vendors and sub-contractors will be compiled and maintained by the QA Manager. Supporting documentation (copy of certification, QA protocol, etc) will be maintained on the Q: drive.

## 4.7 SERVICE TO THE CUSTOMER

### 4.7.1 Customer Service

The ASCL maintains open channels of communication with customers and is cooperative in providing a timely response to their concerns and questions regarding requests for services and the status of ongoing work. In order to ensure confidentiality of case information, limit potential for contamination, ensure security of evidence and case records and to provide the best service possible to all customers, the ASCL will not routinely permit the customer to be present during the testing process. Any requests by the customer to be present during testing will be communicated to the Executive Director or Scientific Operations Director. Requests for viewing autopsies will be handled by the Chief Medical Examiner. For detailed requirements for court officials to view and/or photograph evidence, refer to Section 3.23 of the *Personnel Handbook* (ASCL-DOC-02).

### 4.7.2 Customer Feedback

The ASCL shall seek feedback from customers in several ways including personal communications, attendance at meetings and through surveys. The ASCL Survey is located on the ASCL website on the Law Enforcement Login page. Surveys may also be sent to customers at any time. Customers will be asked to provide comments on examination services, turn-around time, interactions with ASCL employees and overall satisfaction and suggestions for improvement. Customers (if known) may be contacted regarding any reported unsatisfactory service or significant concern. The results of these surveys shall be reviewed by ASCL Top Management.

## 4.8 COMPLAINTS

**External Complaints**

Any staff member receiving a complaint shall notify their supervisor. The complaint shall be documented and given to the supervisor. The supervisor shall forward the complaint to the Scientific Operations Director who will investigate the situation and notify top management when necessary.

When the concern takes on the nature of a complaint about the laboratory's activities or deficiencies in the quality system, the supervisor will investigate the situation and forward all the information to the QA Manager. The QA Manager will make every effort to investigate and resolve the customer complaint and to determine if a *Correction Action Request* shall be initiated.

The QA Manager shall maintain a customer complaint log that contains the following information:

- Name and organization (if applicable) of complainant
- Date complaint registered
- Reason for complaint
- Corrective Action Request # assigned, if applicable
- Correspondence documentation

External complaints that involve courtroom testimony, demeanor or dress of an analyst shall be investigated by the analyst's immediate supervisor. This investigation should include communication with the involved parties. These conversations shall be documented on an *Agency Contact Form* (ASCL-FORM-06), *email or equivalent document*. The analyst shall document their response to the complaint. If the investigation finds the complaint to be groundless, the Section Chief shall document the findings and present them to the Scientific Operations Director. If the investigation finds the complaint to be valid, the Section Chief shall discuss his findings with the analyst. The Section Chief shall initiate a *Correction Action Request* in Qualtrax and forward all the information to the QA Manager. The Section Chief shall monitor the analyst's courtroom appearances until the analyst demonstrates the problem has been resolved.

### 4.8.1 Internal Complaints

Employees are encouraged to notify the Section Chief, QA Manager or Scientific Operations Director if they have complaints or concerns regarding the quality system. Complaints/concerns may be submitted anonymously through the ASCL Internal Suggestions Survey. If a serious problem is revealed, the QA Manager must be notified and a *Corrective Action Request* initiated.

Policies and procedures for internal complaints regarding grievance and sexual harassment are found in the *Personnel Handbook* (ASCL-DOC-02).

## 4.9 CONTROL OF NONCONFORMING TESTING

### 4.9.1 General

Nonconforming work are those situations in which ASCL procedures are not followed or the agreed requirements of the customer are not met. (e.g. testing of standards and controls, test precision and accuracy, , the care and handling of evidence, instrument performance, etc.). All employees and supervisory personnel must be vigilant for any indication of nonconforming testing.

Nonconformity, deficiencies or departures from accepted quality standards may be identified or brought to the attention of laboratory management through a variety of avenues including but not limited to the following:

- Technical case review
- Administrative case review
- Quality control checks
- Instrument performance verification or calibration
- Proficiency testing
- Testimony evaluation
- Case re-examination
- Internal or external audits
- Employee or customer complaints
- Quality System Reviews
- Staff Observations or supervision



There are three key levels of non-conforming work.

**1. <u>Simple Correction</u>** – The nature of the non-conforming work is limited in scope and significance. The problem identified is easily corrected and does not cast doubt on the overall reliability of results.

**Action:** If the nonconforming test or work is an isolated incident and easily resolved by a quality control adjustment, the correction can be taken immediately and documented in the case file or the discipline's quality control records, when appropriate.

**2. <u>Level 2 Non-Conformity</u>**– The nature of the non-conforming work does not, to any significant degree, affect the fundamental reliability of the work product of the laboratory or the integrity of evidence, but it may continue to occur without a proper root cause analysis and appropriate corrective action. While corrective action is necessary, there is still no doubt regarding the overall reliability of test results.

**Action:** The Section Chief and QA Manager will be notified immediately for consultation and to evaluate the significance of the nonconforming testing or work. A Corrective Action Request will be initiated.

**3. Level 1 Non-Conformity** – The nature of non-conforming work is such that the reliability of test results is questioned. There is potential that erroneous or invalid results have been reported.
**Action:** The Section Chief and QA Manager will be notified immediately for consultation and to evaluate the significance of the nonconforming testing or work. A Corrective Action Request will be initiated, but it is imperative to first address suspension of work and recall of reports. It may be necessary to notify the customer of any affected cases. The Section Chief, DNA Technical Leader (if applicable), and Top Management are responsible for and have the authority to immediately suspend any observed non-conforming work activity that could result in erroneous reports or unreliable testing data. Resumption of work may only be authorized by agreement between the Section Chief, DNA Technical Leader (if applicable) and QA Manager.

A common sense approach must be employed in determining what constitutes nonconformity in testing or other work. For example, a minor departure from accepted policy regarding a strikeout on a document would not normally rise to the level of being considered nonconformity. The error would require correction, but not the initiation of the formal corrective action procedure. Continued non-compliance, however, might result in the need for formal corrective action implementation. Supervisory discretion must be utilized in determining the need for corrective action or whether other remediation could be employed. The QA Manager shall be involved to ensure that standards are applied evenly throughout the laboratory and that actions taken are in compliance with accreditation and laboratory quality assurance standards, as well as, consistency with past corrective actions.



### 4.9.2 Corrective Action

If the QA Manager's evaluation indicates that nonconforming test or work could recur or that there is doubt about the compliance of the laboratory's operations with accreditation standards or its own policies and procedures, the corrective action procedures in Section 4.11 shall be promptly followed.

## 4.10 IMPROVEMENT

The laboratory shall strive to continually improve the effectiveness of the Quality Management System. Opportunities for improvement are identified through various sources, including:

- Corrective and Preventive Action Requests
- Customer surveys
- Annual management reviews
- Internal and external audits
- Employee suggestions

## 4.11 CORRECTIVE ACTION

### 4.11.1 General

The laboratory corrective action process is implemented and documented whenever Level 1 or Level 2 nonconformities (see Section 4.9) from accepted laboratory practice are indicated. The QA Manager is authorized to oversee the corrective action process. The QA Manager with consult with the Scientific Operations Director, direct the corrective action process, and actively involve the appropriate Section Chief and, if applicable, the DNA Technical Leader.

### 4.11.2 Cause Analysis

Corrective action cannot be implemented without first determining the root cause(s) of the problem. The Section Chief shall start the investigation to determine the root cause of the problem. The root cause analysis shall examine all possible sources of the nonconforming work which may include evaluating case records, technical methods, equipment, supplies, training, customer agency needs, work environment, etc. Cause analysis is the key to ensuring that the nonconforming work is prevented from occurring again and sometimes the most difficult part in the corrective action procedure. Often the root cause is not obvious and thus a careful analysis of all potential causes of the problem is required.



### 4.11.3 Selection and Implementation of Corrective Actions

A *Corrective Action Request (CAR)* may be initiated through Qualtrax by any employee. This request will be sent to the QA Manager for an initial review to determine if a *CAR* is warranted. If initiation of a *CAR* is considered acceptable, the QA Manager will send the *CAR* to the appropriate Section Chief for root cause determination and recommendation of appropriate corrective action. The corrective action shall be appropriate to the magnitude and the risk of the problem. The *CAR* will then be sent to the QA Manager, Scientific Operations Director and the DNA Technical Leader (for DNA or CODIS *CAR*s) to determine whether the nonconforming work is Level 1 or Level 2 nonconformity, management's corrective action recommendation and a *CAR* completion date. The *CAR* will be sent back to the Section Chief when correction action is warranted. Once the corrective action has been completed, the QA Manager, Scientific Operations Director and DNA Technical Leader (if applicable) must approve closure of the *CAR*. The Executive Director will approve and close the *CAR*.

The corrective action process is documented and maintained with *CAR* within the Qualtrax system. The *CAR* shall include a description of the nonconforming work, root cause findings, the respective corrective action(s), and after-action monitoring requirements to avoid recurrence. In addition, the QA Manager will keep a log on the Q: drive documenting the CAR #, section affected, a brief description of the issue and any supporting documentation (if applicable).

**Level 2 Nonconformity**
Corrective Actions:

- Take appropriate corrective action to minimize the chance of a recurrence of the nonconformity.
- A casework review may be necessary.
- Depending on the circumstances of the nonconformity, the examiner may be required to successfully complete a proficiency test or work under supervision for a period of time.

**Level 1 Nonconformity**
Corrective Actions:

- Halt the casework of the individual or, depending on the circumstances, the entire laboratory or discipline section until the appropriate corrective action is taken to minimize the chance of a recurrence of the nonconformity.
- Notify the customer agency if necessary.
- Review all relevant casework.
- If the nonconformity is not systemic but isolated to an individual, the examiner must successfully complete a proficiency test before resumption of casework. Remedial training or a period of supervised casework may be required as well.



## 4.11.4 Monitoring of Corrective Actions

One of the goals of the corrective action process is to implement a corrective action that will be effective in preventing recurrence of the nonconformity. Before a CAR is closed, the situation may require monitoring over a period of time designated in the CAR. Upon a determination that the corrective action was effective, the Executive Director will conduct a final review of the CAR and by his concurrence with the findings, indicate that the corrective action process is closed.

During the internal audit process, CARs will be reviewed for effectiveness.

### 4.11.5 Additional Audits

A serious nonconformity that brings into question compliance with established policies and procedures, or compliance with ASCLD/LAB accreditation requirements may necessitate additional audits of the appropriate area(s) or of the entire quality system. Depending on the requirements of the corrective action, these conformance audits could be from an external source or conducted internally.

## 4.12 PREVENTIVE ACTION

### 4.12.1 General

Preventive action is a pro-active process to identify opportunities for improvement rather than a reaction to the identification of problems or complaints. All employees are encouraged to identify opportunities to improve quality and to correct sources of potential nonconformities.

### 4.12.2 Preventive Action Procedures

A *Preventive Action Request (PAR)* may be initiated through Qualtrax by any employee that identifies a potential source of a nonconformity or needed improvement in technical or process procedures in the quality system. This request will be sent to the QA Manager for an initial review to determine if a *PAR* is warranted.

The evaluation of the *PAR* may include:

- Consultation with a wide range of lab employees to determine if the preventative action could have an unforeseen negative impact on the quality of work or operations in other areas of the laboratory.
- Research of ASCL policies and procedures to determine the need for possible revisions related to the improvement.
- Research regarding the improvement if it is known to be in effect at other laboratories.
- Budget analysis to determine the fiscal impact of the proposed improvement.
- Discussing the plan with customers to determine if the preventative action would affect their needs and/or be viewed as a quality improvement.

If initiation of a *PAR* is considered acceptable, the QA Manager will assign an individual to lead a team to develop a plan for improvement. Once the plan has been developed by the team, the plan will be submitted to the QA Manager. Appropriate measures shall be taken to ensure that the recommended actions are reasonable and target the potential problem.

The QA Manager, Scientific Operations Director, the DNA Technical Leader (for DNA or CODIS *PAR*s) and the Executive Director will evaluate the plan and provide a recommendation. Once approved, the *PAR* plan may be implemented. After the *PAR* plan has been fully implemented and monitored for a defined period of time, a summary of the implementation must be submitted to the QA Manager. The QA Manager, Scientific Operations Director, the DNA Technical Leader (for DNA or CODIS *PAR*s) and the Executive Director will review the *PAR* implementation for effectiveness and closure.

The preventive action process is documented and maintained with the *PAR* within the Qualtrax system. In addition, the QA Manager will keep a log on the Q: drive documenting the PAR #, section affected, a brief description of the issue and any supporting documentation (if applicable).

The effectiveness of preventive actions shall be examined in the annual Management System Review.

## 4.13 CONTROL OF RECORDS

### 4.13.1 General

4.13.1.1

Records include quality and technical records. This policy provides procedures and practices for the identification, collection, organization, accessibility, filing, indexing, access, storage, maintenance and disposal of records.

**DEFINITIONS**

**QUALITY RECORDS**

Quality records include any documents that provide documented support to the conformity to the quality management system. Labwide records include, but are not limited to, reports from internal audits, controlled document review and approval, management reviews as well as records of corrective and preventive actions. Discipline specific records include, but are not limited to, method and equipment verification records, reagent and chemical QC logs, training records, proficiency and competency test records, courtroom testimony monitoring records, chemical inventory records, reference collection records and audit records.

**TECHNICAL RECORDS**

Technical records (i.e. case records) include all examination and administrative documentation as part of individual laboratory case files.



**4.13.1.2 Record Storage and Retention**

All records shall be legible and shall be stored and retained in such a way that they are readily retrievable and in which the environmental conditions are suitable so as to prevent damage, deterioration or loss of the records. The location for the storage of physical records must be secure (limited access area), dry and temperature controlled.

*Technical Records*- Case files will be retained by the Arkansas State Crime Laboratory in either physical or electronic form. The Arkansas State Crime Laboratory is currently using the JusticeTrax LIMS-plus software program. All case documentation will be stored electronically. Once reviewed, this electronic version is considered the official case record.

Historical non-electronic case files for the Little Rock laboratory are stored in the appropriate section, the evidence storage area in Evidence Receiving, the file rooms located in the annex, or off-site storage. Historical non-electronic case files for the Hope Regional Laboratory are stored onsite. Whenever a case file is removed from an on-site

file storage area by an authorized person, an In-and-Out card shall be inserted in its space citing the case number, date of removal, and initials of person removing the file, and initials of the person for whom the file is being retrieved.

*Quality Records*-Labwide quality records will be stored as specified by the QA Manager. Discipline quality records such as reagent and chemical QC logs, training records, etc., will be stored in a location designated by the Section Chief.

**Record Retention**

Case files will be stored indefinitely. The following items are required to be retained either electronically or in paper form for a period of 15 years:

- Proficiency Tests
- Corrective Action Documentation
- Audit Records
- Training Records
- Continuing Education Documentation
- Court Testimony Monitoring

All other quality records will be stored for at least one full ASCLD/LAB International accreditation cycle (5 years).



**4.13.1.3 Confidentiality of Records**

Pursuant to Arkansas State Statute 12-12-312, the records, files, and information kept, obtained, or retained by the ASCL shall be privileged and confidential and released only under and by the direction of a court of competent jurisdiction, the prosecuting attorney having criminal jurisdiction over the case, or the public defender appointed or assigned to the case.

Customer agencies that have made the necessary arrangements with the ASCL are granted secure access to JusticeTrax iResults where they may check on the status of their laboratory requests and view completed Reports for their agency.

Investigative information may not be released until after a technical review has been completed (The Discipline Quality Manual may allow an independent verification for release of investigative information). Final results, conclusions, or reports will be released only after a technical and administrative review of the case file has been completed and documented.

| Requesting Party | Documentation Required* |
|---|---|
| Court order from a court of competent jurisdiction | Court order from a court of competent jurisdiction |
| The prosecuting attorney requesting for a designated party (i.e. other prosecutor's office, law enforcement agencies) to receive case information | Request from the prosecuting attorney's office having legal jurisdiction |
| Public Defender appointed or assigned to the case | Requests made by a public defender must include the statement that they are the public defender of record in that case. |
| Law enforcement agency other than the submitting agency | Request from the law enforcement agency and the release of the requested information is made at the discretion of the Executive Director or designee. |
| Private defense attorney in a criminal case | Request by the prosecuting attorney having criminal jurisdiction over the case or by court order. |

*All requests must be documented and scanned into the case file as case images and become a part of the permanent case file.



**4.13.1.4 Security and Protection of Records**

Access to quality and technical records (electronic & physical) will be limited to those ASCL employees that require access to conduct analysis and assist customers. Physical records are kept in limited access areas (refer to section 5.3.4.1). Access rights are initially assigned at the time of hiring with approval of the Section Chief utilizing the New Hire IT Information Form (ASCL-FORM-27). The Scientific Operations Director may review security roles at any time and may change them when appropriate.

Access to the documents will be limited through the use of a user name and password with appropriate permissions specified. Data is further controlled at a group and individual level so that only those authorized for specific data access management rights are assigned access to that data. Audit trails are established on all transactions in LIMS. In addition, access to case files in LIMS may be restricted when deemed necessary.

All electronic records are backed up and stored off-site.

### 4.13.2 Technical Records

All case records are stored in JusticeTrax LIMS-plus software program. As a case is created in JusticeTrax, 'request(s)' will be added for the disciplines that have evidence to be processed. Each request has a set of milestones- 'request entered,' 'findings entered,' 'draft complete,' 'technical review assigned,' 'technical review completed,' administrative review assigned,' 'administrative review completed' and 'report released.' In addition, each request has a storage location for images.

#### 4.13.2.1 Technical Records Supporting Information

Each case record will contain enough information to identify factors to enable re-analysis to be conducted under conditions as close to the original as possible. The identity of the individuals who sampled evidence, conducted testing, and/or verified results will be reflected in the case record.

#### 4.13.2.2 Data Recording

Observations, data and calculations shall be recorded at the time they are made and shall be identifiable to the specific task.

##### 4.13.2.2.1 Testing Dates

Dates shall be recorded throughout the records to indicate when the work was performed, but at a minimum, the starting and ending dates must be recorded. Each Discipline Quality Manual must describe a dating procedure.

#### 4.13.2.3 Corrections and Changes

##### 4.13.2.3.1 Documenting a Correction

Any corrections made to existing hardcopy examination records will be made by an initialed, single strikeout (so that what is stricken can still be read) by the person making the change. Correction fluid or correction tape may not be used.

##### 4.13.2.3.2 Amended Examination Records

When the analyst/examiner has completed the request, they will set the milestone(s) in JusticeTrax to 'draft complete.' Examination records for a request will be considered "completed" once the request has been 'draft completed' in Justice Trax. If a change to the examination record is made after this milestone, the original record will remain in the electronic case file and the changed record stored with a different name (i.e. amended notes, etc.).

#### 4.13.2.4 Examination and Administrative Records

Examination records are any records generated by the analyst/examiner for a case file (e.g. notes, worksheets, photographs, spectra, printouts, charts and other data). Examination records that are essential for the evaluation and interpretation of the data must be stored in the appropriate folder within the 'Request' folder in the LIMS case file. When it is not feasible to incorporate the examination records in the LIMS case file, these records may be stored external to the LIMS case file. The location of these records must be specified in the Discipline Quality Manual or in the case file.

All other records contained in the case file will be considered administrative records and will be stored in the 'Case Images' folder in the LIMS case file.

#### 4.13.2.5 Supporting Records

Records to support conclusions shall be such that in the absence of the analyst, another competent reviewer could evaluate what was done and interpret the data. Discipline Quality Manuals will detail the required record documentation.

##### 4.13.2.5.1 Latent Print Records

Latent print records shall meet all requirements listed in Appendix C of the ASCLD/LAB Supplemental Requirements and will be addressed in the Latent Print Quality Manual.

##### 4.13.2.5.2 Operating Parameters

Operating parameters used during instrumental analysis shall be recorded in the examination records or another suitable and appropriate location. The locations shall be specified in the Discipline Quality Manual.

#### 4.13.2.6 Examination Record Documentation

The unique Arkansas State Crime Laboratory (ASCL) case number (YYYY-00000) (handwritten or electronically generated) and the analyst's handwritten initials or secure electronic equivalent of initials or signature must be on all examination records in the case file.

#### 4.13.2.7 Record Preparation

When examination records are prepared by an individual other than the issuing examiner, the initials of that individual(s) shall be on the page(s) of examination records representing their work. It shall be clear from the case record who performed all stages of the examination/analysis.

#### 4.13.2.8 Administrative Record Documentation

The unique Arkansas State Crime Laboratory (ASCL) case number (YYYY-00000) (handwritten or electronically generated) must be on all administrative records in the case file.

#### 4.13.2.9 Data Identifier

When data from multiple cases is recorded on a single printout, kept in a single file and referenced for all files for which data was generated, the case number for each case for which data was generated shall be appropriately recorded on the printout. When the printout is placed in each of the appropriate case records, only the individual case number is required.

#### 4.13.2.10 Double-Sided Examination Records

When examination records are recorded on both sides of a page, each side shall have the case number and analyst's initials.

#### 4.13.2.11 Permanency of Examination Records

Handwritten notes and observations must be in ink. However, pencil may be appropriate for diagrams or making tracings. Nothing in the handwritten information will be obliterated or erased.

#### 4.13.2.12 Documenting Verifications

Verification is an independent examination of the evidence by another competent analyst to confirm the primary analyst's conclusions. Verifications shall be performed by another analyst qualified in the same discipline/sub-discipline. Verifications must be documented in the case file indicating that the critical finding has been verified and agreed to, by whom, and when the verification was performed.

If the individual confirming the result draws the same conclusion as the primary analyst, documentation shall be clear as to what was verified, who performed the verification and the date the verification was performed. If the individual draws a different conclusion from the primary analyst, both analysts shall attempt to come to a resolution. If a resolution cannot be achieved, the issue shall be brought to the attention of the Section Chief. The Section Chief shall consult with the involved parties and resolve the issue.

Each Discipline Quality Manual will detail verification and documentation requirements.

#### 4.13.2.13 Abbreviations

Abbreviations may be used in examination records. An abbreviation legend must be accessible to reviewers of the case file.

## 4.14 INTERNAL AUDITS

### 4.14.1 Internal Audit Procedures

An internal audit of the laboratory will be performed to verify that the operations continue to comply with the requirements of the management system and accreditation requirements. Internal audits typically address all elements of the ASCL Quality Management System, although it may occasionally be necessary to conduct internal audits limited in scope to resolve certain issues.

The QA Manager will schedule and coordinate the audit in each discipline of the laboratory. Such audits will be carried out by trained and qualified personnel who are, wherever resources permit, independent of the activity to be audited. Each audit team will be selected and led by the QA Manager. The selection of auditors for a specific team will primarily be based on the expertise needed for that particular audit. It should be noted that attention is given by the QA Manager to select auditors who have the ability to relate in a non-threatening and non-judgmental manner with others whose work is being audited.

The auditors will be tasked with the following:

- reviewing Employee History Binders (EHB) to ensure that proficiency tests, testimony evaluations and annual training is documented and that CVs are current
- reviewing case records to determine whether analytical protocols for that particular discipline are being followed
- walking through the laboratory areas to review instrument/equipment logs, perform spot checks of reagents/chemicals, to ensure laboratory cleanliness and health and safety
- having interviews/discussions with some of the analyst(s)

After the completion of the audit, each team meets with the QA Manager to review findings. This meeting is intended to help clarify issues and correct possible misunderstandings that may have occurred during the audit.

The QA Manager collects the written information developed by the auditors, and develops an audit summary containing a statement of findings and general observations. The QA Manager will provide a copy of the audit summary to the Section Chief. The QA Manager and Section Chief will meet to discuss the audit summary. Each Section Chief receiving a finding must either appeal the finding or complete a Corrective Action Request (CAR) for each finding. These appeals or CARs, along with

supporting documentation, must be returned to the Quality Assurance Manager by the assigned deadline, if applicable.

General observations are considered as opportunities for improvement and require a response by the Section Chief.

The audit summary for all disciplines will be reviewed by the Quality Assurance Manager, Scientific Operations Director and the Executive Director.

#### 4.14.1.1 Audit Frequency
Internal audits shall be conducted annually.

#### 4.14.1.2 Audit Documentation Retention
Records of internal audits shall be retained through one ASCLD/LAB accreditation cycle or five years, whichever is longer.

### 4.14.2 Corrective Action
When audit findings cast doubt on the effectiveness of the operations or on the correctness or validity of the test results, timely corrective action shall be taken, and the ASCL shall notify customers in writing if investigations show that the laboratory results may have been affected.

### 4.14.3 Audit Documentation
The area of activity audited, the audit findings and corrective actions that arise from the audit shall be recorded and maintained by the QA Manager.

### 4.14.4 Audit Follow-Up
Documentation of the implementation and effectiveness of the corrective action taken will be recorded in the *CAR*. Before a *CAR* is closed, the situation may require monitoring over a period of time designated in the *CAR*. Upon a determination that the corrective action was effective, the Executive Director will conduct a final review of the *CAR* and by his concurrence with the findings, indicate that the corrective action process is closed. In addition, the *CAR* will be evaluated in the next internal audit for implementation and effectiveness.

### 4.14.5 Annual Accreditation Audit Report
Annual Accreditation Review Reports will be sent to ASCLD/LAB within 30 calendar days following the ASCL's accreditation anniversary date.

## 4.15 MANAGEMENT REVIEWS

### 4.15.1 General Requirements

In order to assess the effectiveness of the ASCL Quality Management System and to find opportunities to improve the quality of forensic services provided, the ASCL Top Management will conduct a review of all components of the ASCL Quality Management System. This review shall take account of:

- the suitability of various ASCL policies and procedures;
- reports from ASCL management;
- the internal audit summary;
- corrective and preventive actions;
- external audit findings or other external assessments;
- the results of proficiency tests;
- changes in the volume and type of work;
- customer feedback;
- quality system complaints;
- recommendations for improvements
- other relevant factors such as quality control activities, facilities, resources, and staff training.

In addition, this review shall include goals, objectives and action plans for the coming year.



#### 4.15.1.1 Management Review Frequency

Management reviews shall be conducted annually. This review will normally be conducted in conjunction with the annual audit report

#### 4.15.1.2 Documentation and Retention

Records of management reviews shall be maintained by the QA Manager and retained through one ASCLD/LAB accreditation cycle or five years, whichever is longer.

### 4.15.2 Actions

Findings from management reviews and the actions that arise from them shall be recorded. Top Management shall ensure that those actions are carried out within an appropriate and agreed timescale.

# 5 TECHNICAL REQUIREMENTS

## DEFINITIONS

### CHEMICAL

A substance or compound that is used for its constant chemical composition and characteristic properties.
*Examples: Acid/Basic solutions, Davidow*

### REAGENT

A substance or compound that is added to a system in order to bring about a chemical reaction or is added to see if a reaction occurs.
*Examples: Marquis, Duquenois-Levine, Ninhydrin, Phenolphthalein, Sodium Rhodizonate Solution*

### CONTROL

A substance or compound that is utilized to ensure that a method and/or instrument is working as expected.
*Examples: Positive and Negative Controls*



## 5.1 GENERAL

### 5.1.1 Test Factors

Many factors determine the correctness and reliability of the tests performed by the ASCL. These factors include human factors, accommodation and environmental conditions, test methods and method validation, equipment, measurement traceability and the handling of test items. These factors are discussed in detail in the following sections.

### 5.1.2 Test Reliability

The factors stated above shall be taken into account when developing test methods and procedures, in the training and qualification of personnel and in the selection and calibration of the equipment that is used in casework.

### 5.1.3 Reagents/Chemicals/Controls

Reagents, chemicals and controls utilized by the disciplines of the Arkansas State Crime Laboratory are maintained and quality controlled by each discipline. The Discipline Quality Manuals, when applicable, shall have a procedure for ensuring the reliability of reagents.

In addition, the following rules shall be followed:

- Items with a manufacturer-specified expiration date may not be used after that date without documentation to support continued reliability
- For items without a manufacturer-specified expiration date, dates will be based on experience, industry standard, or scientific consensus.
- Appropriate logs must be maintained within each discipline for reagents and standards used.
- Each analyst must ensure that the controls, reagents and/or chemicals used in their analysis are of satisfactory quality.
- Controls, reagents, or chemicals which are determined not to be reliable must be removed from use immediately.

#### 5.1.3.1 Documentation and Labeling

Reagents may be purchased or prepared. Minimum requirements for quality control of reagents are outlined below.

**Purchased Reagents/Chemicals**

Containers must be labeled with the following:

- Lot number
- Date opened
- Expiration date (if applicable)
- Initials upon opening
- Date received and initials

**Prepared Reagents/Chemicals**

Containers must be labeled with the following:

- Identity
- Date of preparation
- Date of expiration

**Prepared Reagents**

Logbook must include the following:

- Identity
- Date of preparation
- Date of expiration
- Instructions on preparation of reagent
- Lot numbers of solvents and/or chemicals used in preparation of reagent

- A method to verify the reagent's reliability (if applicable)*
- Initials of the person preparing reagent
- Initials of the person verifying reagent (if applicable)

*The reliability testing shall occur before use or, if appropriate, concurrent with the test.
Note: Non-routine reagents prepared for one time use may be recorded with the above items in the laboratory case notes and any excess reagent discarded after use.

**Prepared Chemicals**
Logbook must include the following:

- Identity
- Date of preparation
- Date of expiration
- Instructions on preparation of chemical
- Lot numbers of solvents and/or compounds used in preparation of chemical
- Initials of the person preparing chemical

**Controls**
Specification of appropriate controls is a part of each Discipline Quality Manual. The following characteristics shall be considered when designing controls:

- Similarity to the samples being tested
- Homogeneity and stability
- Significant variables in the analysis
- Quantitative controls shall be in the expected range of the assay

An appropriate logbook must be kept for controls, including the following:

- Source
- Lot number, when available
- Date received and/or prepared
- Expiration date, if appropriate
- Demonstration of quality

## 5.2 PERSONNEL

### 5.2.1 General

Section Chiefs shall ensure the competence of all who operate specific equipment, perform tests, evaluate results and sign test reports. Personnel in training shall have appropriate supervision. Personnel performing specific tasks shall be qualified on the basis of appropriate education, training, experience and/or demonstrated skills, as required.

At the conclusion of training, the Section Chief shall document (e.g. memo, letter, etc.) that the individual has been properly trained and that their ability to perform the particular testing has been assessed. This record shall be kept in the individual's Employee History Binder. In addition, the Analyst & Technician Competency Authorization Documentation form (ASCL-FORM-62) must be completed and placed in the individual's Employee History Binder.

#### 5.2.1.1 Training Program

The ASCL New Analyst/Technician Training Manual (ASCL-DOC-03) must be completed by all new analysts and technicians. The purpose of this training program is to provide an introduction to laboratory policies as well as knowledge to the basics of forensic science and criminal court proceedings. Below are the areas that are covered in this program:

- Establishment of the ASCL
- Confidentiality of Records
- Ethics in Forensic Science
- General Knowledge of Forensic Science
- Criminal Law Procedures and Expert Testimony
- Quality Assurance/Quality Control

This training must be completed concurrently with the discipline training program.

Each discipline shall have a training manual that is used to facilitate training in the knowledge, skills, and abilities needed to perform the appropriate testing. Discipline Training Manuals shall have stated objectives and may specify required readings, tasks and practical exercises. Each employee will be trained under the direction of an experienced analyst in each aspect of the duties they are expected to perform. Training records shall be sufficiently detailed to provide confirmation that individuals performing particular tasks have been properly trained and that their ability to perform the required responsibilities has been assessed.

Past work experience and training may be substituted for the training program to the extent that it has been demonstrated to be relevant and sufficient, with the approval of the Section Chief and Scientific Operations Director.

Below are areas that shall be covered in the Discipline Training Manuals (when applicable):

- Evidence Handling
- Sampling
- Test Methods
- Equipment
- Controls, reagents, chemicals
- Result Interpretations
- Case Record (technical and administrative record requirements)
- Report Writing
- Technical and Administrative Reviews, Independent Verifications
- Moot Court

The effectiveness of training received and the technical competence of analysts are monitored by the following mechanisms:

- 100% technical and administrative review (continuous mechanism) (see Section 5.9.4)
- Proficiency testing (see Section 5.9.3)
- Monitoring court testimony (see Section 5.9.6)
- Annual audits (this process includes an additional review of case files produced by each analyst)



The discipline specific training programs can be modified to provide refresher or remedial training, as needed, for previously experienced employees (e.g. if an analyst has been away from the bench for a period of time, if an analyst has an inconsistency in a proficiency test or casework, etc.). The Section Chief will coordinate to design an appropriate modified program. This modified training shall be documented.

**5.2.1.2 Moot Court**

When applicable, the training program shall include training in the presentation of evidence in court (see 5.2.6.2.2).

**5.2.1.3 Additional Training**

The training program shall include the application of ethical practices in forensic sciences, a general knowledge of forensic science, and applicable criminal and civil law procedures.

### 5.2.2 Employee Development Program

Continuing education of laboratory personnel is an ongoing activity in the laboratory. The ASCL encourages and supports employees to improve their knowledge and skills to grow as individuals and to fully develop their potential. The ASCL affords employees the opportunity to attend training annually and participate in professional forensic organizations. This training may include professional meetings, staff development seminars, technical training courses, in-house technical meetings, courses and seminars and ASCL sponsored seminars and conferences. Travel procedures are detailed in Section 3.21 in the *ASCL Personnel Handbook* (ASCL-DOC-02). This training shall be documented in the individual's Employee History Binder.

### 5.2.3 Personnel Employment

All analysts and technicians are employed by the ASCL.

### 5.2.4 Job Descriptions

Current job descriptions for personnel involved with testing shall be maintained in their Employee History Binder. Job descriptions shall include the following:

- responsibilities with respect to performing tests;
- responsibilities with respect to the planning of tests and evaluation of results;
- responsibilities for reporting opinions and interpretations;
- responsibilities with respect to method modification and development and validation of new methods;
- expertise and experience required;
- qualifications and training programs;
- managerial duties, if applicable.

### 5.2.5 Authorization Documentation

Section Chiefs shall authorize personnel to perform sampling, testing, issuing of reports, performing technical reviews, performing test methods and operating particular types of equipment. This shall be documented on the Analyst & Technician Competency Authorization Documentation form (ASCL-FORM-62), signed by the Section Chief and maintained in the individual's Employee History Binder. Each Employee's History Binder shall also contain a curriculum vitae or resume that includes educational and professional qualifications, training, skills and experience. The individual's Training Binder will contain all completed training records.

### 5.2.6 Technical Personnel Qualifications

#### 5.2.6.1 Education

##### 5.2.6.1.1 Forensic Chemistry & Physical Evidence

Analysts working in the Forensic Chemistry or Physical Evidence disciplines shall possess a baccalaureate or an advanced degree in a natural science or a closely related field.

##### 5.2.6.1.2 Forensic Toxicology

Analysts working in the Toxicology discipline shall possess a baccalaureate or an advanced degree in a natural science, toxicology or a closely related field.

##### 5.2.6.1.3 Forensic Biology

Analysts working in the Forensic Biology discipline shall possess a baccalaureate or an advanced degree in a natural science or a closely related field, and if performing DNA analysis and where applicable, shall meet the educational requirements of the *Quality Assurance Standards for Forensic DNA Testing Laboratories* and *Quality Assurance Standards for DNA Databasing Laboratories*.

##### 5.2.6.1.4 Firearms/Tool Marks, Latent Prints & Digital Evidence

Analysts working in the Firearms/Tool Marks, Latent Prints & Digital Evidence disciplines shall possess a baccalaureate degree with science courses. The educational requirement may be waived for analysts working in the Discipline prior to December 2004.

##### 5.2.6.1.5 Technicians

Technicians working as technical support in any discipline shall meet the education requirements specified in their job description and Discipline Quality Manual.

#### 5.2.6.2 Competency Testing

##### 5.2.6.2.1 General

All analysts and technical support personnel that generate analytical results, regardless of academic qualifications or past work experience shall satisfactorily complete a competency test (examination of unknown sample(s)) in each category of testing in which they intend to perform casework. Satisfactorily completing a competency test means achieving the intended results. Failure to achieve the intended results would require review or retraining until testing achieves the intended results.

##### 5.2.6.2.2 Competency Testing Requirements

For laboratory personnel whose job responsibility includes report writing, a competency test shall include, at a minimum:

- Examination of sufficient unknown samples to cover the anticipated spectrum of assigned duties and evaluate the individual's ability to perform proper testing methods;
- A written report to demonstrate the individual's ability to properly convey results and/or conclusions and the significance of those results/conclusions;
- A written or oral examination to assess the individual's knowledge of the discipline, category of testing, or task being performed; and
- Moot court to demonstrate the individuals' ability to properly convey and present results of evidence in court.

Moot Court may be waived for employees receiving training in additional categories of testing within the same discipline.

### 5.2.7 Literature

The ASCL maintains and provides access to literature resources such as relevant books, journals and other literature dealing with each discipline. Each discipline shall have a system in place to encourage individuals to review appropriate new literature.

## 5.3 ACCOMMODATION AND ENVIRONMENTAL CONDITIONS

### 5.3.1 General

The ASCL facilities' energy sources, lighting and environmental conditions allow for the correct performance of the tests. Because of the routine verifications that are performed on reagents, instruments and equipment, the laboratory can ensure that the environmental conditions do not adversely affect the test results. When appropriate, Discipline Quality Manuals shall address environmental conditions that can affect the results of the tests.

The ASCL provides adequate space for the storage of supplies, instrumentation/equipment; writing reports; maintaining records, reference works and other necessary documents; facilitating the operation of instruments and equipment; and storing accessories near instruments and equipment.

### 5.3.2 Environmental Conditions

When environmental conditions are a factor in affecting the quality of results, they shall be monitored, controlled and recorded. Testing shall be stopped when the environmental conditions jeopardize the results of the tests.

### 5.3.3 Laboratory Separation

The ASCL laboratory areas are designed so that there is effective separation between neighboring areas in which there are incompatible activities. Disciplines are responsible for taking measures to prevent cross-contamination.

### 5.3.4 Access

Access to and use of areas where testing occurs and evidence is stored is controlled (see 5.3.4.1.c).

### 5.3.4.1 Security

The Arkansas State Crime Laboratory complex consists of approximately 79,000 square feet of laboratory and administrative areas in the main building and an annex consisting of approximately 3,000 square feet of storage and automotive processing space located across the street. The facility is located at #3 Natural Resources Drive, Little Rock, Arkansas.

The building housing the ASCL is owned by Arkansas Building Authority and rent is paid on the facilities every quarter. Arkansas Building Authority is responsible for the physical plant and grounds.

In the event of commercial power failure, the laboratory complex has an emergency generator that is activated within 10 seconds. The generator furnishes the security system and emergency lighting within the laboratory. It is also used to power emergency circuits for critical refrigeration and some instrumentation needs. The generators are the responsibility of Arkansas Building Authority.

The Hope Regional Laboratory is located at 2500 South Main St., Hope, Arkansas, on the campus of the University of Arkansas Community College at Hope. The building consists of approximately 2,200 square feet of laboratory and administrative areas.

In the event of a commercial power failure the security system is equipped with a battery backup which is rated to provide twenty-four hours of continued functionality.

Laboratory security encompasses the physical plant and personnel security. All laboratory personnel must pass a criminal background check.



**ASCL-Little Rock**

**a.) Operational Areas**

**Doors**

Front doors to the receptionist area of the building are unlocked 0730 through 1700 except holidays and weekends. The door leading into the lobby will remain locked at all times and all visitors will be required to sign in. Law enforcement officers must show their badges before being admitted into the laboratory. All other visitors must have an escort. All other exterior doors are to remain locked at all-times and require a security fob to open. This includes the South and North doors on first floor and doors to the basement.

Doors to the Administrative section of the laboratory are open during business hours on weekdays, and closed on weekends and holidays. Entry during non-business hours requires a security fob for access.

Note: The assigned Arkansas Building Authority Employees have access to the exterior doors of the building and mechanical rooms inside the building.

**Elevators**

- A security fob is required to activate the elevators in the basement and on the first floor.
- Only central and west elevators will go to all floors.
- South elevator will not go to the basement, only first through third floors

**Stairs**

- All stairwell entries from the basement and first floor require security fob activation.
- Only central and west stairwells go to all floors.
- South stairwell will only allow access to first through third floors.

**b). Exterior and Entrance/Exit Points**

**Cameras**

Security Cameras are located in and around the laboratory complex.

**Lighting**

The following time-controlled exterior security lighting protects the ASCL:

| | | |
|---|---|---|
| **Pole Lights** | **Photo Cell** | **Dusk to Dawn** |
| **Wall Lights** | **Photo Cell** | **Dusk to Dawn** |

The lighting of the building is the responsibility of Arkansas Building Authority.

**c). Laboratory Areas**

Access to all laboratory areas is restricted by security fob or key entry.

Forensic DNA, CODIS and Physical Evidence laboratory areas are locked at all times and require a security fob or escort to enter the section. All others, with the exception of the following people, are not allowed access to the section:

- Executive Director
- Assistant Director
- Scientific Operations Director
- Quality Assurance Manager
- Health and Safety Manager
- CODIS Personnel
- Forensic DNA Personnel
- Physical Evidence Personnel
- Other personnel deemed necessary by the Executive Director

All employees are required to provide a DNA sample for the ASCL contamination database. Any person who enters the secure areas of the ASCL may also be required to provide a DNA sample for the ASCL contamination database.

Note: The toxicologists, forensic chemists, and physical evidence analysts have access to the toxicology and forensic chemistry sections at all times. The shared access is due to

the physical layout of the laboratory.

**d). Fob and Key Accountability**

Security fobs are issued to authorized personnel in order to access certain areas of the laboratory complex and must be approved by the Executive Director. An *Access Area Approval Form* (ASCL-FORM-10) must be completed prior to giving security fob access to an individual. This form must be completed for new hires, damaged/lost fobs, etc. Approval documentation will be kept with the Quality Assurance Manager.

The laboratory has a security fob access system controlled by a computer placed in the Administrative Section (access reports can be generated from the security fob access system software).

**Key Boxes**

Firearms, Forensic Biology, Forensic Chemistry and Physical Evidence sections have a key box containing cabinet keys and section door keys. The key to the section key box is kept by the appropriate Section Chief. A log must be kept when keys are added or removed from the section key box.

The ASCL has a Master Key Box containing master door keys, extra door keys, section key box keys and/or section master cabinet keys. A Master Key Log will be kept and an inventory will be conducted as needed. Keys removed or added to the Master Key Box will be recorded on a logsheet maintained by the Quality Assurance Manager. Keys that are given out on a temporary basis (e.g. an individual forgot to bring their key) will be recorded on a logsheet attached to the Master Key Box. Door keys are issued to authorized personnel in order to access certain areas of the laboratory complex and must be approved by the Executive Director An *Access Area Approval Form* (ASCL-FORM-10) must be completed prior to giving a key from the Master Key Box to an employee (except for a temporary basis situation).



**e.) Non-Business Hours**

An outside security company furnishes security to the building during the off-hours as follows:

| | |
|---|---|
| **Monday through Thursday** | **1700-0700 each day** |
| **Friday/Weekends** | **1700 Friday through 0700 Monday** |
| **Holidays** | **24 hours a day** |

The guard station is located in the lobby of the ASCL and the guard's duties are as follows:

- Watch the monitors that are connected to cameras located around the perimeter of the building.

- Report any unusual activity outside the building to the Little Rock Police Department.
- Call someone on the emergency list if alarms activate or other emergencies exist at the laboratory.
- Does not provide access to anyone without authorization from Administration during off hours except emergency personnel.

**f). Evidence Storage Areas**

Evidence storage conditions prevent loss, deterioration and contamination and maintain the integrity and identity of the evidence. Proper security is achieved by storing evidence in locked cabinets, refrigerators, vaults, or rooms. Evidence storage space may be shared by laboratory personnel. It is not necessary to place locks on refrigerators and freezers which are maintained in rooms and/or areas which are secure and restricted. Each Discipline Quality Manual shall address evidence storage procedures.

The Evidence Receiving Section has limited access. Access requires a security fob and/or key. The following people have access to the evidence storage area:

- Evidence Receiving Section Chief
- Evidence Technicians

The following individuals have access to the evidence storage area but only during regular work-hours. Individuals must sign the log when entering and leaving the evidence storage area. They do not need to be escorted.

- Executive Director
- Assistant Director
- Scientific Operations Director
- Quality Assurance Manager
- Health and Safety Manager
- Information Technology Support
- Other personnel as deemed necessary by the Executive Director

**g). Fire Detection System**

A security company provides 24 hours a day monitoring of the fire alarm system and notifies the fire department and Arkansas Building Authority.

**Laboratory Annex Security**

The annex is monitored by the main laboratory's security system consisting of motion sensors, door sensors, and key locks. If access is gained without disarming the system, an audible alarm will sound, and the security guard's station will also be alerted. The annex consists of a solvent storage area, file storage area, supply storage area, and automotive processing area.

- Solvent storage: consists of a four wall concrete block area that is temperature controlled for storage of solvents in flammable cabinets and is secured by key lock
- Miscellaneous supply storage: areas secured by key lock and motion detectors
- File storage: temperature controlled and secured by key lock
- Automotive processing area: secured by motion detectors and key lock

**Security Cameras**

Security Cameras are located in and around the laboratory annex.

**Doors**

Security Fobs are issued to authorized personnel in order to access the laboratory annex. The annex's gates have a fob access system controlled by a computer placed in the Administrative Section. All doors require key access. Keys are issued to authorized personnel, as determined by the Executive Director, in order to access certain areas of the laboratory annex.

**ASCL-Hope Regional Laboratory**

**a.) Operational Areas**

**Doors**

The front entrance has a key lock and has a contact sensor for the security system. The compressed gas storage room entrance has a key lock and has a contact sensor for the security system.

**b). Exterior and Entrance/Exit Points**

**Cameras**

Security cameras are located around the laboratory building. These cameras are maintained by the Telecommunications Division of the University of Arkansas Community College at Hope.

**c). Laboratory Areas**

The exterior entrance to the laboratory examination area has a key lock, a magnetic lock, and has a contact sensor for the security system. The interior entrance to the laboratory examination area has a key lock, a magnetic lock, and has a contact sensor for the security system.

**d). Security Card and Key Accountability**

Security cards are issued to authorized personnel, as determined by the Executive Director, to provide access to the areas of the laboratory protected by the magnetic lock

| |
|---|
| system. Distribution of all door keys (including security cards) must have the approval of the Executive Director. An *Access Area Approval Form* (ASCL-FORM-10) must be completed prior to giving security card or key access to an individual. This form must be completed for new hires, damaged/lost cards, etc. Approval documentation will be kept with the Quality Assurance Manager. |
| **Key Box** |
| The laboratory has a key box containing security cards, door keys and cabinet keys. The key to the key box is kept by the Forensic Chemist Supervisor. A log must be kept when keys are added or removed from the section key box. |
| **e). Non-Business Hours** |
| The Hope Regional Laboratory has an intrusion alarm system equipped with door contact sensors, motion detectors, and glass breakage detectors. |
| **f). Evidence Storage Areas** |
| The entrance to the evidence storage area has a key lock, a magnetic lock, and has a contact sensor for the security system. Each chemist has a personal evidence storage area with a key lock to secure the evidence during processing. |
| **g). Fire Detection System** |
| A security company provides 24 hours a day monitoring of the fire alarm system and notifies the fire department and University of Arkansas Community College at Hope. |



### 5.3.5 Housekeeping

**ASCL-Little Rock**

Janitorial service to the building is the responsibility of Arkansas Building Authority who has contracted with an outside business. Janitorial employees are located in the building each workday during regular business hours. They perform their housekeeping duties in the disciplines only when laboratory employees are present. The DNA and Physical Evidence disciplines are responsible for daily housekeeping duties. If additional housekeeping procedures are necessary, they shall be specified in the Discipline Quality Manual.

**Hope Regional Laboratory**

The laboratory staff takes measures to ensure good housekeeping in the laboratory. If additional housekeeping procedures are necessary, they shall be specified in the Discipline Quality Manual.

### 5.3.6 Health and Safety Program

The ASCL is committed to providing a safe working environment for its employees. The laboratory has a *Health and Safety Manual* (ASCL-DOC-08) that must be followed by all employees and guests. Employees not following the safety guidelines as spelled out

in the safety manual will be subject to disciplinary action. Guests will be asked to leave or conform to the safety regulations.

## 5.4 TEST METHODS AND METHOD VALIDATION

### 5.4.1 General

Methods and procedures used at the ASCL will be appropriate for the testing utilized in casework. These include methods and procedures for sampling, handling, transport, storage and preparation of items to be tested, and where appropriate, an estimation of the uncertainty of measurement. Instructions on the use and operation of all relevant equipment and on the handling and preparation of items for testing shall be written where the absence of such instructions could jeopardize the results of tests.

Each discipline within the ASCL will maintain a quality manual, which shall contain a *Test Method* section. This section will contain a detailed procedure for each method of analysis utilized in that discipline. These procedures shall be available to all analysts who work in that discipline. In many cases, there are many acceptable procedures to accomplish a particular examination. The considerable variations that exist in actual casework demand that a forensic scientist be free to exercise sound judgment in choosing the method most appropriate to the problem at hand. It is important to give the analyst reasonable flexibility in selection and application of analytical methods to suit the needs of a particular case situation. The Section Chief ensures that those procedures which are contained in their Discipline Quality Manual meet acceptable scientific standards, and that they are applied appropriately.



Each test method shall include the following, when applicable:

- the scope of the test method
- reagents, standards and controls
- sample preparation
- quality assurance/control measures
- the interpretation of results, which should include:
    - precautions to be taken
    - possible sources of error
    - applicable literature references
    - criteria for positive, negative, and inconclusive results
    - applicable disclaimers
- documentation requirements
- specifications for critical reagents and equipment (if applicable)

It is acceptable for laboratory procedures to specify where specific case record components (e.g. spectra of standards or calibration documentation) are maintained without a reference to the location of these records in the case file.

If it becomes necessary to make a deviation from a documented method and/or procedure, it must be technically justified and authorized by the appropriate Section Chief. The deviation will be documented in the case record. Each Section Chief will keep a log of method/procedure deviations.

### 5.4.2 Selection of Methods

The ASCL shall use test methods that meet the needs of the customer and are appropriate for the tests undertaken. By completing and submitting the submission sheet, the customer relinquishes all decisions regarding analytical processing and choice of methods to the ASCL.

Standard Methods, Laboratory-Developed Methods or Non-Standard Methods may be utilized in casework after the appropriate validation and/or performance verifications have been performed as described in this section. The most current version of the method must be documented and readily available to the analyst for reference unless it is not appropriate or possible to do so.

**Standard Methods**

Standard Methods are methods published in international, regional or national standards or by reputable technical organizations, or in relevant scientific texts or journals, or as specified by the manufacturer of the equipment. Before utilizing a Standard Method in casework, a performance verification must be performed to ensure the reliability of the method. Records of the performance verification shall be retained in the appropriate discipline. Standard methods do not need to be supplemented or rewritten as internal procedures if these standards are written in a way that they can be used as published. However, it may be necessary to provide additional documentation for optional steps in the method or additional details to ensure consistent application.



### 5.4.3 Laboratory-Developed Methods

Laboratory-Developed Methods are modifications of standard methods for a specific laboratory purpose. Laboratory-Developed Methods must be validated (see Section 5.4.5) and a performance verification completed prior to use in casework.

### 5.4.4 Non-Standard Methods

Non-Standard Methods are methods or procedures that are developed to meet a forensic need not covered by Standard Methods. Non-standard methods must be

appropriate and contain a clear specification as to the intended use of the method. These methods must be validated (see Section 5.4.5) and a performance verification completed prior to use in casework.

For new test methods, procedures shall be developed prior to the tests being performed and shall contain the information as described in Section 5.4.1:

## 5.4.5 Validation of Methods

### 5.4.5.1 General

Validation is the process used by the scientific community to assess the ability of a procedure to reliably obtain a desired result, to determine the conditions under which such results can be obtained and to determine the limitations of the procedure. The validation process identifies the critical aspects of the procedure that must be carefully controlled and monitored. All validations must include successful testing of samples that are representative of what would typically be encountered in casework.

Validation studies can be conducted externally by the scientific community (as in the case of standard or published methods) or by the laboratory itself (as in the case of methods developed in-house or where significant modifications are made to previously validated methods).



### 5.4.5.2 Validation Process

**Validation Plan**

Prior to implementing a Non-Standard Method, Laboratory Developed Method, a Standard Method used outside its intended scope, or amplifications and modifications of standard method, a proposal outlining a validation plan will be developed to confirm that the methods are fit for the intended use by qualified personnel equipped with adequate resources. This validation plan will be submitted to and approved by the appropriate Section Chief(s), Quality Assurance Manager and the DNA Technical Leader (when applicable) prior to conducting the validation. The validation plan shall be updated as necessary and communicated appropriately.

**Validation Techniques and Evaluation**

The validation shall be as extensive as is necessary to meet the needs of the application. Validation procedures must be evaluated on the basis of accuracy, precision, sensitivity and specificity. These four components are essential to establishing and maintaining the reliability of the analytical methods used in the laboratory. Validation shall also involve the use of at least one of the following procedures: Split Samples, Blind Trials or Concordance Testing.

After the validation has been completed, a validation summary will be prepared by the personnel involved in the validation process that will include the results obtained, the procedure used for the validation and a statement as to whether the method is fit for the intended use. The validation summary will be reviewed and approved by the appropriate Section Chief(s), Quality Assurance Manager, the DNA Technical Leader (when applicable) the Scientific Operations Director and Executive Director. The Discipline Quality Manual shall be updated appropriately.

Following approval of the validation, individuals will be trained by the personnel involved in performing the validation. This training will include the interpretation of results, quality assurance/control measures and documentation requirements. The training will be performed prior to application of the new analytical procedure in casework and documented in the individual's Employee History Binder. All documentation supporting validation must be kept on record in an area located close to where the analysis occurs and readily available to each analyst who utilizes it.

Note: Validations conducted outside of the laboratory- individuals will be trained appropriately prior to use in casework, and this training shall be documented in the individual's Employee History Binder.

Substantive changes to an analytical procedure that can potentially affect the outcome of the test may result in a performance verification or an additional validation prior to use in casework.



#### 5.4.5.3 Relevancy of the Validation

The laboratory shall ensure the range and accuracy of the values obtained from the validated methods is relevant to the needs of the customer (e.g. detection limit, selectivity of the method, etc.).

#### 5.4.5.4 Validation – Performance Verifications

Prior to implementing an internally or externally validated method new to the ASCL, a performance verification will be performed prior to the use in casework to ensure the reliability of the method. Records of the performance check shall be retained in the appropriate discipline.

### 5.4.6 Estimation of Uncertainty of Measurement

#### 5.4.6.1 General

The ASCL will assess the measurement uncertainty when quantitative values are reported for: 1) the quantity (mass or volume) of a controlled substance, or the presence

of a controlled substance when it is reported as a percentage (mass or volume fraction) of the whole sample; 2) values reported for blood alcohol for toxicology samples; and 3) the barrel length of a firearm and/or the overall length of a firearm.

The analytical protocols for the affected disciplines shall contain a calculated estimation of the uncertainty of measurement. The Section Chief, or designee, shall be responsible for maintaining documentation of any uncertainty of measurement calculations conducted. The estimated uncertainty of measurement shall be reported.

**5.4.6.2 Procedures**

Reasonable estimation of the performance of the method shall be based on previous experience and validation data. It is important to keep in mind that the nature of certain test methods may preclude rigorous, metrologically and statistically valid calculation of the uncertainty of measurement. Only those components under the control of the laboratory need to be considered when estimating the uncertainty of measurement. The basic requirements for estimating the uncertainty of measurement include but are not limited to the following:

- Specify what is being measured.
- Specify the measurement method, specifically the equipment or instrument used to take the measurement.
- Construct and document an appropriate uncertainty budget identifying and listing all potential sources of uncertainty.
- Gather the appropriate measurement data. Sources of measurement data could include method validation, QC data, proficiency tests, replicate testing data, calibration certificates and scientific literature.
- Estimate the uncertainty of the measurement method in accordance with an appropriate formula.
- Document the estimated uncertainty of the measurement method and have the results and supporting data readily available in the laboratory.
- Maintain or recalculate the estimated uncertainty of measurement as the need arises (i.e. when a significant change occurs in the uncertainty budget). Each Discipline Quality Manual will have procedures for recalculating the uncertainty of measurement, if applicable.

**5.4.6.3 Sources of Uncertainty**

When constructing the uncertainty budget, all uncertainty components which are of importance in the given situation shall be taken into account using appropriate methods of analysis. Sources that may contribute to the uncertainty include but are not limited to the following:

- reference standards and reference materials
- methods and equipment
- environmental conditions
- properties and condition of the item being tested
- the individual conducting the measurement

Those factors (that are known from previous experience) that do not impact the uncertainty of measurement to any significant degree may be dismissed.

### 5.4.7 Control of Data

When a case has been 'draft completed', the individual has ensured that they have checked all calculations and data transfers for accuracy and that the calculations conform to written procedures. By completing the technical review, the technical reviewer is confirming that they have checked the calculation(s) and data transfers for accuracy. If an additional check is required, it shall be included in the appropriate Discipline Quality Manual.

#### 5.4.7.2 Electronic Data

Computers or automated equipment that are used for the acquisition, processing, recording, reporting, storage, or retrieval of test data will meet the following guidelines:

a) Computer software developed by the ASCL must be documented in sufficient detail and suitably verified.

b) Procedures must be established and implemented for protecting the data. Such procedures shall include, but not be limited to, integrity and confidentiality of data entry or collection, data storage, data transmission and data processing (see Section 4.13.1.3-4).

c) Computers and equipment will be maintained to ensure proper functioning and are provided with environmental and operating conditions necessary to maintain the integrity of the data.

Commercial off-the-shelf software in general use within their designed application range may be considered to be sufficiently validated. However, software configuration/modifications shall be validated.

#### 5.4.7.2.1 Digital Evidence Data

The ASCL has implemented appropriate measures to prevent unauthorized access to computer systems used for examining digital evidence. These measures are detailed in the *Digital Evidence Quality Manual* (DE-DOC-01).

## 5.5 EQUIPMENT

### DEFINITIONS

#### CALIBRATION

A process which establishes a relation between the instrument/equipment values with the reference standard or material. *Examples: calibration of micropipettes and balances to a NIST traceable standard by an outside vendor.*

#### PERFORMANCE VERIFICATION

Confirmation that performance requirements of a measuring system are achieved. *Examples: balances, internal IR polystyrene compared to a known polystyrene reference to confirm that the instrument/equipment is fit for service.*

#### ADJUSTMENT

The process performed to correct the measurement system in order to meet the required specifications.

#### REFERENCE STANDARD

A standard that is traceable through calibration of other measurement standards and is used for the calibration, performance verification or adjustment of other measurement devices.
*Examples: NIST traceable weights and rulers*

#### REFERENCE MATERIAL

A material that is traceable and normally accompanied by documenation issued by an authoritative body that is used for the calibration, performance verification or adjustment of measurement devices.
*Examples: drug standards, chemicals such as PFTBA for autotuning the GCMS.*



### 5.5.1 General

The ASCL has adequate equipment to perform the necessary testing. The equipment is maintained by personnel in the discipline who utilize it. Details of specific quality control measures on equipment that has a significant effect on the quality of test results will be outlined in the appropriate Discipline Quality Manual.

If the ASCL needs to use equipment outside of its permanent control, it shall ensure that it meets the requirements in this section.

### 5.5.2 Calibration and Performance Verification

Before equipment is placed into service, a calibration or performance verification with traceable or certified reference standards/materials shall be performed to ensure that it meets the specifications required by the appropriate method. Designated equipment will also be subject to a schedule of calibration or performance verifications. Written procedures for the scheduled requirements will be maintained in the appropriate Discipline Quality Manual. All calibrations and performance verifications shall be properly documented in a log. This log shall be maintained and readily available to each analyst who utilizes it.

### 5.5.3 Equipment Training

New employees shall be trained on the appropriate equipment during their training program, as stated in each Discipline Training Manual. Section Chiefs shall authorize personnel to operate equipment (documented on ASCL-FORM-62). This authorization documentation shall be signed by the Section Chief and maintained in the Employee's History Binder. Only individuals who have been trained in the proper use of the equipment shall operate it.

When new equipment requires a validation, appropriate personnel will be trained, and this training will be documented and kept in each individual's Employee History Binder.

Up-to-date instructions on the use and maintenance of the equipment shall be readily available for use.



### 5.5.4 Equipment Identification

All equipment and its software, if practicable, will be uniquely identified. Equipment having an effect on the quality of results shall also be identified so that it is traceable to its maintenance and calibration/verification records.

### 5.5.5 Equipment Records

Each Discipline shall maintain records in a readily available location for equipment (and its software) having a significant effect on the quality of test results. The records shall include at least the following information:

a. the identity of equipment and its software and version;
b. the name of manufacturer, model, serial number and asset number, if applicable;
c. date that the equipment was calibrated or verified prior to being placed into service;
d. the location of the equipment (section and room #, if appropriate);
e. the manufacturer's instructions, if available, or reference to their location;

f. a calibration or performance verification log that includes the following, when applicable:
   - dates of calibration or performance verification
   - results of calibration or performance verification
   - documentation of adjustments
   - acceptance criteria
   - due date of the next calibration or performance verification (or schedule)
   - copies of calibration reports and certificates or reference to their location

g. a maintenance log, including any damage, malfunction, modification or repair to the equipment;
h. LIMS instrument case number(s), if applicable;
i. identification that is used to identify the equipment on case data, if applicable.
j. date permanently removed from service, if applicable.

When equipment is retired, the records shall be maintained and available for at least one full ASCLD/LAB International accreditation cycle (5 years).

**5.5.6 Handling and Maintenance of Equipment**

All equipment will be maintained in a clean, orderly, and safe condition. Laboratory equipment shall be handled responsibly to ensure optimal performance and to avoid contamination and premature wear and damage. It is the Section Chief's responsibility to ensure that proper planning and care is taken when equipment is initially located or subsequently moved. Due care shall be taken if equipment is to be shipped to a manufacturer or vendor for calibration or maintenance to minimize the possibility of damage in transit. Equipment that is infrequently used shall be stored (covered, powered-down, etc.) per the manufacturer's recommendations.

The maintenance of equipment having a significant impact on the quality of results is a planned activity. The Discipline Quality Manual will indicate preventative maintenance steps to be taken by analysts or contract service representatives in order to maintain optimum performance from the equipment.

**5.5.7 Equipment Out of Service**

If equipment is not working properly or potential problems are observed, it is the duty of the analyst to immediately take the appropriate steps to repair/correct the problem or inform the appropriate individual of the problem. Any problem and the action to correct the problem must be logged in the equipment's log.

Equipment that is not working properly must be clearly marked as being 'OUT OF SERVICE' in order to prevent inadvertent use of the equipment. The equipment will not be used in casework until appropriate calibration or verification is performed.

When it has been determined that equipment was not working properly, the Section Chief shall take into consideration the effect the problem may have had on previous tests and if there is an issue of non-conforming work (see Section 4.9).

**5.5.8 Calibration Status**

Whenever practicable, equipment requiring calibration shall be labeled or otherwise identified to indicate the status of calibration, including the date when last calibrated and the date when recalibration is due.

**5.5.9 Outside Maintenance**

A performance verification shall be performed on equipment that has gone outside of the direct control of the laboratory (e.g., for repair or preventive maintenance) to ensure that it meets the specifications required by the appropriate method before being returned to service. Verification/Calibration or maintenance records will reflect that the equipment was functioning properly prior to being returned to service.

**5.5.10 Intermediate Performance Verifications**

Where appropriate, periodic performance verifications shall be completed on equipment on a set schedule as defined in the Discipline Quality Manual to maintain confidence that it meets the specifications required by the appropriate method. Documentation of these verifications shall be kept for review in a location specified in the Discipline Quality Manual.



**5.5.11 Equipment Adjustments**

After a performance verification has been performed, it may be necessary to make adjustments to the equipment utilizing certified or traceable reference standards/materials (e.g. balance, pH meter, GCMS). These adjustments shall be documented in the calibration/performance verification log.

There are types of equipment that cannot be adjusted if they fail calibration specifications (e.g., liquid in-glass thermometers). Correction factors may be used, but procedures are necessary to ensure that copies (e.g. in computer software) are correctly updated.

### 5.5.12 Equipment Protection and Security

Equipment with calibration settings that can be adjusted by laboratory personnel will be safeguarded against unintentional changes which would invalidate the test results. This may be accomplished by one the following:

- Utilizing positive/negative controls, standards or known reference material at the beginning and end of instrumental runs/analytical sequences;
- Tamper proof seals placed over the adjustment points;
- Dedicated personnel as the only individual(s) authorized to make the adjustments.

The Discipline Quality Manual shall indicate any such procedures necessary to safeguard equipment calibrations, when applicable.

## 5.6 MEASUREMENT TRACEABILITY

### DEFINITIONS

#### MEASUREMENT

Process of experimentally obtaining one or more quantity values that can reasonably be attributed to a quantity.

#### TRACEABILITY

Property of a measurement result whereby the result can be related to a reference through a documented unbroken chain of calibrations, each contributing to the measurement uncertainty.

#### REFERENCE

Either a reference standard or a reference material (may also be referred to as a measurement standard).

#### CHAIN OF CALIBRATIONS

Each reference standard or reference material having a higher-order calibration as you proceed up the hierarchy or chain of traceability.

#### CALIBRATIONS

A specified procedure with established measurement uncertainty, that is a series of measurements establishing the response of a known reference and then comparing the response of the item being calibrated.



Each discipline shall be able to exhibit measurement traceability on those measurements requiring a measurement uncertainty calculation (See Section 5.4.6) or measurements that have a significant effect on the accuracy or validity of the result of the test.

This table represents equipment used for testing that can be calibrated by external calibration laboratories using traceable reference standard.

| Types of Equipment | Type of Calibration Reference Standard |
|---|---|
| Balances | Mass |
| Calipers | Length |
| Thermometers | Temperature |
| Pipettes | Derived from mass |
| Rulers/Tapes | Length |
| Trigger Pull Devices | Derived from mass |

Below are examples of individual 'Chain of Comparisons' for calibration of equipment, reference standards and reference materials. It is important that the ASCL contract calibration services and purchase of reference standards and materials from providers that have the following chain of comparisons below.

| **Chain of Comparisons for Calibration of Equipment** | |
|---|---|
| BIPM* (SI) | Maintains the International prototype standard |
| National Metrology Institute-NIST | Reference Standard calibrated by BIPM |
| Primary Calibration Laboratory (PCL) | Reference Standard calibrated by NIST |
| Accredited Calibration Service Provider | Reference Standards calibrated by the PCL |
| Accredited Calibration Service Provider | Calibrates ASCL Equipment |

*Bureau International des Poids et Mesures

| **Chain of Comparisons for Reference Standards** |
|---|
| Reference standard manufacturer or supplier with reference standards following the above chain of comparisons |
| Reference standard purchased by ASCL |
| Reference standard used to conduct Performance Verifications and Adjustments on equipment |
| After a scheduled period of time, the reference standard will be externally calibrated by an accredited calibration service provider |
| Reference standard used at ASCL to conduct Performance Verifications and Adjustments on equipment |

| **Chain of Comparisons for Reference Materials** |
|---|
| National Metrology Institute (NMI) – NIST |
| Reference Material Provider |
| Reference material used at ASCL to conduct Performance Verifications on equipment* |

*Chain of comparisons is not required for reference materials used for testing.

The individual Chain of Comparisons above can be combined to show an overall Chain of Comparisons to establish a connection from the measurement instrument/equipment to reference standards/materials. Records for each step in the chain shall be maintained by the appropriate discipline. The Discipline Quality Manual will have defined

intervals for re-calibration or performance verifications of measurement instrumentation/equipment and reference standards. Section Chiefs or designees will be responsible for ensuring that reference standards and measurement instrumentation/equipment meet appropriate specifications.

**Measurement Chain of Comparisons/Calibrations**

| **MEASUREMENT EQUIPMENT** |
|---|
| ▪ Name<br>▪ Model<br>▪ Serial # or other identifier<br>▪ Quantity measured (length, mass, volume, etc.) |
| **REFERENCE STANDARD/MATERIAL** |
| ▪ Serial # or other identifier<br>▪ Manufacturer Specifications |
| **REFERENCE STANDARD/MATERIAL VERIFICATION** |
| ▪ Measurement result (with reference to SI, where possible)<br>▪ Documented uncertainty of measurement and a description of the process used to develop it<br>▪ Information on the competence of the calibration laboratory and/or in-house personnel involved. |



### 5.6.1 Equipment Calibration Requirements

New equipment (see equipment table above) used for tests having a significant effect on the accuracy or validity of the result of the test, shall either be received with calibration documentation from the provider or an external calibration will be performed prior to use in casework.

#### 5.6.1.1 Performance Verification

Procedures on performance verification of instrumentation/equipment will be detailed in the Discipline Quality Manual. It will normally be necessary to complete a performance verification after maintenance has been performed. In general, performance verification intervals shall not be less stringent than the manufacturer's recommendations.

## 5.6.2 Specific Requirements

### 5.6.2.1 Calibration

The Arkansas State Crime Laboratory is not a calibration laboratory and utilizes external calibration services for calibration of equipment. There are two categories for equipment: 'Category 1'- The equipment has a significant effect on the accuracy or validity of sampling or a test result (i.e. measurements that require a measurement of uncertainty calculation, reported measurements, etc.). 'Category 2'- The equipment could have some effect on the overall quality of testing.

When equipment requires a calibration, the ASCL shall use an external calibration laboratory accredited to ISO/IEC 17025:2005 (accreditation by IAAC or ILAC MRA signatory accrediting bodies is preferred) for 'Category 1' equipment. For 'Category 2' equipment, the external calibration laboratory does not have to be ISO/IEC 17025:2005, but the vendor shall be evaluated by the Quality Assurance Manager utilizing the Vendor Evaluation Form (ASCL-FORM-61). The calibration documentation issued by the external calibration lab must confirm competence, measurement capability and traceability to the appropriate National metrology Institute (NMI).

Discipline Quality Manuals shall indicate what 'Category' the equipment falls under as well as the calibration procedures (schedule, etc.) for the equipment.



### 5.6.2.2 Testing

#### 5.6.2.2.1 Calibration Uncertainty

The calibration uncertainty shall contribute little to the total uncertainty of the test result.

#### 5.6.2.2.2 Non-SI Unit Traceability

There are certain calibrations that currently cannot be strictly made in SI units. In these cases, calibration shall provide confidence in measurements by establishing traceability to appropriate measurement standards such as:

- The use of certified reference materials provided by a competent supplier to give a reliable physical or chemical characterization of a material;
- The use of specified methods and/or consensus standards that are clearly described and agreed by all parties concerned

### 5.6.3 Reference Standards and Reference Materials

#### 5.6.3.1 Reference Standards

Each discipline shall have a procedure for the calibration of its reference standards, if applicable. The ASCL shall use an external calibration laboratory (or manufacturer) accredited to ISO/IEC 17025:2005 (accreditation by IAAC or ILAC MRA signatory accrediting bodies is preferred) for the purchase or calibration of reference standards if the standard has a significant effect on the accuracy or validity of sampling or a test result (i.e. reference standards used for performance verifications of Category 1 equipment). The calibration documentation issued by the external calibration lab must confirm competence, measurement capability and traceability to the appropriate National metrology Institute (NMI) (to the SI).

Such reference standards of measurement held by the laboratory shall be used for performance verifications and/or adjustments only and for no other purpose, unless it can be shown that their performance as reference standards would not be invalidated.

#### 5.6.3.2 Reference Materials

Reference materials obtained from a provider accredited to ISO Guide 34:2009 in combination with ISO/IEC 17025:2005 is acceptable. If the provider does not have this accreditation, the Quality Assurance Manager shall evaluate the provider utilizing the Vendor Evaluation Form (ASCL-FORM-61) to ensure that the provider has sufficient traceability.

All reference materials, whether prepared in-house or purchased from commercial sources, must be verified prior to use, and where possible, be traceable to SI units of measurement, or to certified reference materials. A Certificate of Analysis will suffice for verification.

##### 5.6.3.2.1 Reference Collections

Reference collections of data or items/materials encountered in casework which are maintained for identification, comparison or interpretation purposes (e.g. mass spectra, motor vehicle paints or headlamp lenses, drug samples, bullets, cartridge cases, DNA profiles, etc.) shall be fully documented, uniquely identified and properly controlled.

#### 5.6.3.3 Intermediate Checks

The Discipline Quality Manuals shall contain procedures and a schedule of performance verifications needed to maintain confidence in the calibration status of

reference, primary, transfer or working standards and reference materials, when applicable.

**5.6.3.4 Transport and Storage**

Reference standards/materials shall be handled responsibly to prevent contamination or deterioration and in order to protect their integrity. It is the Section Chief or designee's responsibility to ensure that proper planning and care is taken. The Discipline Quality Manual shall contain procedures for the safe handling, transport, storage and use of reference standards and reference materials.

## 5.7 SAMPLING

The process of sampling evidence is unique for each discipline. Each Discipline Quality Manual will contain procedures for sampling, as appropriate. The sampling procedures shall be available at the location where the sampling is undertaken and shall address the factors to be controlled, if applicable, to ensure the validity of the test results. Below are guidelines for developing these procedures.

### DEFINITIONS

#### SAMPLING

Taking a part of a substance, material or product for testing in order to reach a conclusion, make an inference about, and report on the whole. Sampling shall only be used when there is a reasonable assumption of homogeneity of the whole. Example: Testing an amount of white powder and reporting the results for the whole sample.

#### SAMPLING PROCEDURE

A defined procedure used to collect a sample or samples from the larger whole, to ensure that the value obtained in the analysis is representative of the whole. The sampling procedure may include details about size and number of sample(s) to be collected, locations from which to collect the sample(s), and a method to ensure the homogeneity of the larger whole (or to make it so.).

#### SAMPLE SELECTION

A practice of selecting items to test, or portions of items to test, based on training, experience and competence. Sample selection answers questions only about the portion tested. There is no assumption of homogeneity of the whole. Example: Pair of pants with four stains- one stain is chosen to be tested based on the analyst's experience.

#### SAMPLING PLAN

For an item that consists of a multi-unit population (e.g., tablets, baggies, bindles), a sampling plan is a statistically valid approach to determine the number of sub-items that must be tested in order to make an inference about the whole population.

#### ADMINISTRATIVE SAMPLING

An application of *sample selection* in which samples are selected for testing to meet statutory guidelines.

**5.7.1 General**

**Use of a Sampling Plan**

When testing a subset of a multi-unit population in order to reach a conclusion or inference about the whole population:

- The units must appear to be homogeneous
- A statistically valid sampling plan must be utilized
- Each unit (derived from the statistical plan) must be fully tested

**Use of a Sampling Procedure**

Sampling of a single unit that appears to be homogeneous, or is made so, in order to report a conclusion about the unit must follow a procedure that shall be documented in the Discipline Quality Manual and is available at the location where the sampling is undertaken.

**Use of Sample Selection**

Sample selection is used in lieu of a statistically valid sampling plan when the individual does not intend to report a conclusion about the whole population of a multi-item submission. The selection of items to test, and the portions of these items to test, is based on:

- The training and experience of the examiner
- Legal limits/charging guidelines (Administrative Sampling)
- A non-statistically based plan

The Discipline Quality Manual shall state the sample selection methods (non-statistical) that are allowed. Testing requirements shall be applied to at least one unit of the sample.

Guidelines

Discipline Quality Manuals must provide instructions on the following when a sampling plan or sampling procedure may be used:

- Homogeneous Materials-
  - How to determine when a material is homogeneous
  - How the sample can be made homogeneous by the analyst
  - How to remove a sample from a homogeneous material

- Multi-Unit Population (if a statistical sample approach will be utilized)- Population Determination guidelines-
  - The population must be within a single item of evidence

- The population determination shall take into account all typical forms and quantities in which evidence may appear.
- The "sampling unit" is the basic unit (i.e. tablet, baggie of powder, piece of glass, fiber, stain, blood sample, etc.)
- A multiple unit population usually consists of items which are similar in relevant visual characteristics.

Develop procedures on how to statistically determine the number of samples to be tested:

- There are several statistical models that may be used such as hypergeometric, Bayesian and other probability based approaches.
- Samples must be selected at random (without bias).
- The limits of inference that can be made about the population must be documented.

Analysis

Each unit comprising the sample shall be tested to meet all method requirements for that specific discipline.

**5.7.2 Deviations**

Deviations from the sampling plan and procedures as requested by the customer or as deemed appropriate by the analyst shall be approved in writing by the appropriate Section Chief and maintained in the case record.

**5.7.3 Records**

The sampling process used in routine casework, as documented in the Discipline Quality Manual, is not required to be recorded in the case notes. The analyst, when appropriate, will document any deviations as well as any elaborations about the selection and sampling process. The examination record will contain any observations, drawings, diagrams, or images that the examiner has made and that may be appropriate to support the selection of test items by the examiner.

## 5.8 HANDLING OF TEST ITEMS

The Arkansas State Crime Laboratory will receive, secure, analyze and document evidence submitted by duly authorized agencies. The ASCL will process evidence in a timely manner consistent with the need for quality services, preservation of the chain-of-custody and protection of the integrity of the evidence. It is a system-wide priority to ensure that the necessary precautions are taken to maintain the integrity of the evidence, including proper collection and preservation techniques.

The *Evidence Receiving Quality Manual* (ER-DOC-01) contains policies and procedures for the transportation, receipt, handling, protection, storage, retention, maintenance, control and disposition of test items, including all provisions necessary to protect the integrity of the test item. Additional policies may be implemented by individual disciplines in their quality manual.

**Responsibilities and Procedures**

Those employees assigned to the Evidence Receiving Section will have primary responsibility for the receipt, storage, transfer, and return of all evidence. All employees will be trained to recognize the need for taking precautions necessary to ensure the integrity of evidence.

All firearms will be handled as though they are loaded. A Firearms Examiner (or an individual with firearms experience) will perform firearms inspections for loaded/unloaded condition when a signature is absent on the submission sheet indicating that the firearm is unloaded, or the submitter of the evidence is unsure of whether the firearm is loaded/unloaded and requests the ASCL to inspect it.

All externally submitted illicit lab evidence is to be inspected by a forensic chemist or other employees with the appropriate chemistry background and training. The *Illicit Laboratory Safety Form* (ER-FORM-01) will be utilized and signed by a chemist certifying that the evidence has been checked. The *Forensic Chemistry Quality Manual* (DRG-DOC-01) contains policies for inspecting this evidence.

In order to determine the items most likely to assist in the investigation and prioritize those items for examination, the examiner or analyst may conduct a review of large, bulky submissions. Whenever possible, this review will occur with the agency representative in person or by phone to assist with the investigation and to eliminate unnecessary examinations or analyses.

If there is evidence in a case involving a laboratory employee or their immediate family, the employee must notify the Executive Director as soon as possible. The Executive Director or designee will determine the specific case management needs. This includes postmortem examinations.

**Evidence Inventory**

An evidence inventory will be conducted approximately every six months. This inventory will consist of an Evidence Receiving Inventory- all evidence stored in Evidence Receiving and a Section Inventory- all evidence in the analysts' possession. This inventory will not include those samples retained for future analysis or destruction (e.g. toxicology samples, DNA long term storage, etc.). The Evidence Receiving Section Chief will schedule and coordinate the inventory with the Quality Assurance Manager. The Evidence Receiving Section Chief and Quality Assurance Manager will provide a written report to the Executive Director for the Evidence Receiving Inventory and the Section Inventory, respectively. The Quality Assurance Manager will maintain a copy of these reports.

At the Hope Regional Laboratory, the Forensic Chemistry Supervisor will schedule, conduct the inventory and provide a written report to the Executive Director. This inventory will include all evidence held at the laboratory. The Quality Assurance Manager will maintain a copy of the report.

**Evidence Retention**

The ASCL will retain evidence for long-term storage for the Arkansas State Police. The Evidence Section Supervisor will work with the Arkansas State Police to ensure that they remove the evidence after it has been adjudicated. Individual discipline retention policies are found in the appropriate Discipline Quality Manual.

If a private individual requests a sample be retained, a fee may be imposed by the ASCL to cover cost of storage, as determined by the Executive Director or designee.

**5.8.1.1 Chain of Custody**

Evidence tracking within the laboratory is done using the LIMS. All internal transfers, from the time of receipt to the final disposition, are tracked electronically providing a chain of custody which can be printed. The chain of custody shall indicate each person (by signature or equivalent identification) taking possession of an item of evidence or the location of that item, and the date and time of the transfer. The LIMS database contains electronic signatures and initials for all analysts. In some cases, a combination of written and electronic chain of custody is utilized.

**Intra-Laboratory Transfer**
Cases may be transferred within the ASCL System as necessary in order to minimize the turn-around time and to provide the best overall service to our customers.

**Inter-Laboratory Transfer**
If the Arkansas State Crime Laboratory finds it necessary to transfer evidence to an outside laboratory (e.g. FBI, NMS), an *Inter-Laboratory Evidence Transfer Form* (see ASCL-FORM-07) must be completed and entered into the case file. The *Inter-Laboratory Evidence Transfer Form* may be waived for items funded out of a grant and/or items under a contract. Any cost incurred by the laboratory must be approved by the Fiscal Officer.

**Evidence Return**
When all necessary analyses are completed on an item, and it is returned to evidence receiving, the item is retained until it is released to an authorized representative of the submitting agency. Authorized representatives are employees of the submitting agency or have written authorization from the submitting agency on file in evidence receiving. If the evidence technician does not recognize the submitting authorized representative, proper identification must be provided. The signature and printed name of the receiving agency official is required to document this return.

Evidence will only be shipped with receipt of written request from the submitting agency upon approval by the Executive Director or the Scientific Operations Director. When mailing or shipping evidence, the following will apply:

- Controlled substances, currency or firearms cannot be mailed.
- All other evidence may be mailed via U.S. Certified Mail, return receipt requested.
- When shipping any evidence by other than the U.S. Postal Service, the vendors must provide return receipt and be able to track shipment.

When the Evidence Receiving Section supervisor deems necessary, he/she will ensure that submitting agency personnel are notified, in writing, to pick up completed evidence. If the agency does not respond within 30 days, evidence may be refused from that agency until the situation is resolved.

**5.8.1.1.1 Sub-Items**
Items which are subdivided in the laboratory shall be tracked through the documented chain of custody to the same extent that original items are tracked.

#### 5.8.1.1.2 Evidence Sealing

Evidence will be sealed in a manner in which the contents cannot readily escape and in such a manner that opening the container would result in obvious damage or alteration to the container or its tape seal. All evidence must bear a proper seal which shall include the initials or other identification of the person sealing the evidence across the seal.

When the container is opened, the original seal shall be left intact, whenever practical, and a new opening made. When the analysis or examination is completed, the new opening shall be sealed, as outlined in these procedures; thus the original container seals will be intact and all seals will be clearly marked.

If reusing the original container is impractical, a new evidence container may be used. It shall also be marked and sealed according to the above procedures and the original evidence packaging shall be kept inside the second evidence container. If the original packaging cannot be kept, there must be complete documentation along with a picture of original packaging retained in the case record. (Toxicology samples only need a written description of the packaging.) Documentation of the change in packaging along with description must be documented in the case record for future reference.



### 5.8.2 Test Item Identification

A unique case number is assigned to every case when evidence is initially received by ASCL. Each exterior container must have its unique barcode label affixed to it. Agency evidence numbers will be used to identify the evidence whenever practical.

If testing requires that uniquely identified items be subdivided within the laboratory, appropriate sub-item identifiers shall be assigned and the item(s) labeled by the analyst so that the sub-item may be easily tracked and identified as having originated from a particular item.

### 5.8.3 Suitability of Test Items

Evidence submitted to the laboratory must be properly packaged, labeled and sealed to prevent contamination, loss or deleterious change. If there is any packaging deficiency noted at the time of receipt, it must be corrected, preferably by the submitting customer. If the customer is not available or it is not expedient to call the customer back to correct the deficiency, an Evidence Technician may take steps to correct the problem (i.e. provide a remedial seal). However, if the deficiency is serious enough to bring into question the integrity or identity of the test item, the appropriate Section Chief and customer agency must be contacted to resolve the issue before the evidence is analyzed.

If a packaging deficiency is not apparent until the case is checked out by an analyst, the analyst may correct the deficiency. If there is any concern that the packaging deficiency has affected the integrity or identity of the test item, the analyst's Section Chief and the customer agency shall be advised and consulted with for further instructions.

If the analyst discovers an inconsistency between the stated and actual contents of a package or the suitability of an evidence item for testing, the analyst shall make all attempts to contact the customer and document the discussion (e.g. *Agency Contact Form* (ASCL-FORM-06), email, etc.) prior to issuing a report. For minor inconsistencies, the analyst shall use their judgment on whether to contact the customer, but must make a note of the discrepancy in the case file.

All remedial actions taken to correct packaging or evidence deficiencies shall be noted in the case record (e.g. submission form or analyst's notes).



**5.8.4 Safeguarding the Integrity of Evidence**

Evidence will be stored in the evidence storage area until transferred to a laboratory analyst or examiner, another laboratory or the submitting agency according to Evidence Section's Quality Manual. Storage of evidence in individual disciplines is addressed in each Discipline's Quality Manual. Evidence shall be maintained under appropriate conditions to prevent deterioration, loss or damage to the evidence during storage, handling or the testing process.

Evidence requiring special consideration because of its potential for contamination, fragile or hazardous nature shall be handled in accordance with the customer's handling instructions and the *Evidence Receiving Quality Manual*. If evidence has to be stored or conditioned under special environmental conditions (e.g. refrigeration or freezing), these conditions shall be maintained, monitored and recorded.

**5.8.4.1 Securing Evidence**

All evidence not in the process of examination/analysis shall be maintained in a secured, limited-access storage area under proper seal. This will normally be the evidence storage area in Evidence Receiving.

**5.8.4.2 Unattended Evidence**

Evidence in the process of examination may be left unattended for limited periods of time (e.g. lunch, short breaks, etc.) but must be in a secure limited access area. If the analyst needs to be away for a longer period of time, the evidence shall be secured in a

short term storage location, whenever practical. If this is not possible, the analyst shall take reasonable precautions to protect the evidence from loss, cross-transfer, contamination and/or deleterious change.

Evidence shall not be left unattended if it is not in the process of being examined or there is no expectation of frequent examination. Additional policies may be implemented by individual disciplines in their quality manual.

**5.8.4.2.1 Evidence in the Process of Examination**

Items with an expectation of frequent analysis may be considered "evidence in the process of examination/analysis" and may be stored unsealed in a limited access area as long as the evidence is protected from loss, cross-transfer, contamination and/or deleterious change. After 60 consecutive days of no analysis or new requests for comparisons, a case is no longer considered "in the process of examination." Cases no longer in the process of examination shall be closed and the evidence sealed properly until analysis resumes or a new service request is received.

**5.8.4.3 Evidence Marking**

All evidence will be marked or identified with the laboratory case number (e.g. YYYY-000000), if practical, to ensure that it is identifiable and traceable to the corresponding case. Otherwise, the proximal container must be marked or identified with the laboratory case number.

**5.8.4.4 Photographic Evidence**

When evidence, such as latent prints and impressions, can only be recorded or collected by photography and the impression itself is not recoverable, the photographic image must be treated as evidence.

**5.8.4.5 Crime Scene Evidence**

Evidence collected from a crime scene by laboratory personnel shall be protected from loss, cross transfer, contamination and/or deleterious change, whether in a sealed or unsealed container, during transportation to the ASCL. Where appropriate, further processing to preserve, evaluate, document, or render evidence safe shall be accomplished prior to final packaging. The evidence shall be appropriately identified, packaged and entered into LIMS as soon as practical.

**5.8.4.6 Individual Characteristic Databases**

The ASCL utilizes three different individual characteristic databases: Automated Fingerprint Identification System (AFIS) in the Latent Prints section, Combined DNA Index System (CODIS) in the CODIS section and National Integrated Ballistics

Information Network (NIBIN) in the Firearms/Tool Mark section. Employees utilizing these databases must receive proper training and/or clearance through the appropriate organizations (AFIS-Arkansas State Police (ASP); CODIS-National DNA Index System (NDIS) guidelines; NIBIN-Forensic Technologies, Inc. and Bureau of Alcohol, Tobacco, Firearms and Explosives (ATF).

**5.8.4.6.1 Database Samples**

Individual characteristic database samples include ten print cards of known individuals (Latent Prints-AFIS), convicted offender/arrestee known biological samples (CODIS) and test fired ammunition produced at the ASCL (Firearms/Tool Mark-NIBIN). Ten print cards are treated as examination documentation. Test fired ammunition produced by the ASCL and Convicted Offender/Arrestee known biological samples are treated as reference materials. Specific procedures concerning individual characteristic database samples are addressed in the appropriate Discipline Quality Manual.

**5.8.4.6.2 Database Sample Identification**

Individual characteristic database samples controlled by the ASCL must be uniquely identified. The appropriate Discipline Quality Manual will address the identification requirements.

**5.8.4.6.3 Safeguarding Database Samples**

Individual characteristic database samples controlled by the ASCL must be protected from loss, cross-transfer, contamination and/or deleterious change. Specific requirements will be addressed in the appropriate Discipline Quality Manual.

**5.8.4.6.4 Database Sample Access**

Access to individual characteristic database samples is restricted to those employees authorized by the Executive Director. The Section Chief of the respective section will keep an updated list of employees that have access to the database samples.

## 5.9 ASSURING THE QUALITY OF TEST RESULTS

### 5.9.1 General

Each discipline within the ASCL will maintain a quality manual which will contain quality control procedures to continually monitor and ensure the validity of test results. Quality control data will be recorded in a way to allow trends to be detected and whenever practical, statistical techniques will be used to review the data. The records shall be retained to show that all appropriate quality control measures have been taken and are acceptable. The following is a list of quality control items that are utilized at the ASCL to ensure that ASCL test results are of the highest quality. Procedures for these items are located in this manual and the Discipline Quality Manuals.

a) regular use of certified reference materials and/or internally generated secondary reference standards
b) where appropriate, the use of positive and negative controls and internal standards
c) 100% technical and administrative review of case records prior to issuance of the laboratory report
d) competency testing of analysts prior to beginning casework
e) annual proficiency testing of all analysts and technicians
f) replicate testing using the same or different methods, where practical
g) independent verification of all latent print and firearm identifications and eliminations
h) re-analysis of casework
i) annual courtroom testimony monitoring for all testifying analysts



#### 5.9.1.1 Controls and Standards

Appropriate controls and standards (e.g. drug reference materials) shall be specified in the methods and their use recorded in the case record.

### 5.9.2 Quality Control Data

When quality control data is found to be outside the acceptable criteria, planned action shall be taken to correct the problem and to prevent incorrect results to be reported. The initiation of the corrective action process may be necessary as described in Section 4.11.

### 5.9.3 Proficiency Testing

The Arkansas State Crime Laboratory maintains a proficiency testing program designed to provide independent evaluation of individual technical expertise, as well as a mechanism to monitor training needs and procedural weaknesses for both individual analysts and each discipline within the laboratory.

**5.9.3.1 Proficiency Testing Methods**

Analysis, technical review, verification and administrative review policies shall be employed during proficiency testing as they are normally applied to casework. All parts of a proficiency test provided by an approved test provider shall be examined as completely as the discipline's procedures allow.

A case will be created in Justice Trax for all proficiency tests. Under the "Offense" tab, "Proficiency Test" shall be selected. For external proficiency tests, the analyst shall complete the test and submit the results within the prescribed due date from the test provider.

Some external proficiency tests, e.g., those for Firearms & Tool Marks and Latent Prints, may be taken independently by multiple analysts in succession. The first analyst taking the test will submit the results to the external provider before any of the succeeding analysts receive the test. This will be considered an External Proficiency Test. The remaining analysts will take the exam by the prescribed due date from the test provider. These tests will be considered Internal Proficiency Tests. (Note: The cases in Justice Trax will be restricted so that the other analysts taking the test cannot access the case).

The laboratory's overall performance in proficiency testing is reviewed annually by top management as part of the management review.



**5.9.3.2 ASCLD/LAB Proficiency Review Program**

The ASCL proficiency testing program shall comply with the *ASCLD/LAB Proficiency Review Program* (document available at www.ascld-lab.org).

**5.9.3.3 Proficiency Testing- Frequency**

Each analyst and technical support personnel engaged in testing activities shall successfully complete at least one internal or external proficiency test per calendar year in his/her forensic science discipline(s). Employees who perform casework in multiple disciplines will successfully complete at least one test in each discipline. Successfully completing a proficiency test means either obtaining the correct response or completing corrective actions pursuant to ASCL policy and/or directives from an ASCLD/LAB Proficiency Review Committee (PRC).

#### 5.9.3.3.1 DNA Proficiency Testing

DNA analysts and technical support personnel performing DNA analysis shall successfully complete two external proficiency tests per year as specified in the current FBI Quality Assurance Standards (documents available at www.fbi.gov).

#### 5.9.3.3.2 Proficiency Testing- Categories of Testing

Each analyst and technical support personnel engaged in testing activities shall be proficiency tested at least once during each five-year accreditation cycle, in each category of testing appearing on the *ASCL's Scope of Accreditation*, in which the individual performs testing. The disciplines this affects shall have a documented schedule of proficiency testing. Below are the categories of testing in which the ASCL is currently involved.

| **Discipline** | **Categories of Testing** |
|---|---|
| Drug Chemistry | Controlled Substances<br>Quantitative Analysis<br>General Chemical Testing<br>Clandestine Laboratory Analysis |
| Toxicology | Human Performance Forensic Toxicology<br>- General Toxicology<br>- Blood/Alcohol<br>-Urine/Alcohol<br>-Urine/Drug<br>Post-Mortem Forensic Toxicology |
| Trace Evidence | Fire Debris<br>Gunshot Residue<br>Paint<br>Fibers and textiles<br>Glass<br>Hair<br>General Physical and Chemical Analysis<br>Tape<br>Lamp Filament |
| Biology | Body Fluid Identification<br>DNA Nuclear<br>Individual Characteristic Database |
| Firearms/Toolmarks | Firearms<br>Tool Marks<br>Individual Characteristic Database |

| | |
|---|---|
| | Serial Number Restoration |
| Latent Prints | Latent Print Processing<br>Latent Print Comparison<br>Footwear/Tire Impression |
| Digital & Multimedia Evidence | Computer Forensics<br>Video Analysis |

**5.9.3.4 Proficiency Testing- Discipline Requirements**

Each discipline will successfully complete at least one external proficiency test annually. ASCLD/LAB approved test providers shall be used where available. If there is not an ASCLD/LAB approved test provider available, the ASCL will locate and use a source of an external test in the discipline.

**5.9.3.5 Proficiency Testing- Documentation Requirements**

Each Section Chief or designee shall maintain a log of proficiency testing in the individual's Employee History Binder. This log shall contain the following:

- Individual's name
- Unique ASCL case number
- External proficiency identifier, if applicable
- Proficiency provider
- Date proficiency case file assigned
- Date test completed
- Date results reviewed



All internal and external proficiency tests will have a case file generated in JusticeTrax. All administration and examination documentation will be in the assigned electronic case file. This electronic version is considered the official proficiency case record. In addition, the following will be maintained in the case file:

- How the samples were obtained or created (after testing is complete and results have been received)
- Proficiency test results from the provider
- Corrective Action Request documentation, when applicable

Nonconformities identified at any point in the testing will be handled in accordance with Sections 4.9 and 4.11.

Each Section Chief is responsible for comparing the analytical results to the expected results, determining if the analytical results are acceptable, and for reviewing these results with the analyst.

The following criteria shall be used for evaluating proficiency test results:

- All tests are graded as satisfactory or unsatisfactory.
  - A satisfactory grade is attained when the experimental results match the expected results.

- If there is a discrepancy between the expected results and the experimental results, the Section Chief must notify the Quality Assurance Manager.

- Minor discrepancies may be deemed satisfactory based on the following factors with approval of the QA Manager:
  - Discipline interpretation guidelines
  - Consensus results

If the results are deemed to be unsatisfactory, the Section Chief must initiate a Corrective Action Request in Qualtrax.

**5.9.3.6 Proficiency Record Retention**

Proficiency testing records will be retained for at least 15 years.

**5.9.4 Case Review**

All cases will be technically and administratively reviewed prior to the release of the report. The review process must confirm that electronic versions of all necessary documentation are in the imaging module of LIMS.

The review process will be documented on a case review form. All information on the *ASCL Case Review Form* (ASCL-FORM-05) must be included on the discipline's case review form. The Section Chief may add more fields if appropriate. Individual requirements on the *ASCL Case Review Form* (ASCL-FORM-05) may be removed, with the approval of the Quality Assurance Manager.

If a reviewer discovers an error in the case record, the reviewer must document the error on the *ASCL Case Review Form* (see ASCL-FORM-05) and inform the analyst. If the analyst and the reviewer cannot reach consensus, then both the analyst and reviewer must meet with the Section Chief (or designee) for resolution.
All non-conforming work identified during review will be handled according to Section 4.11 *Corrective Action.*

**Technical Review**
The technical review will include a thorough review of the analyst's examination records to ensure that the records support the results on the report.

The technical review does not shift the responsibility for the forensic findings to the reviewer, but the reviewer is responsible to ensure that the records reflect adequate basis for the conclusion.

It is the responsibility of the technical reviewer to report serious or repetitive deficiencies and corrective actions to the Section Chief. If the technical reviewer discovers a problem that raises an immediate concern regarding the overall quality of the analyst's work, the technical reviewer must promptly notify the Section Chief. The Section Chief, Scientific Operations Director, and the Quality Assurance Manager must determine whether an investigation is warranted. If an investigation is undertaken, the Section Chief must complete a *Corrective Action Request Form* (ASCL-FORM-08). This form will be retained on the Q: drive.



**5.9.4.1 Technical Review Requirements**
At a minimum, the technical review shall include a review of all examination records and the report to ensure:

- All necessary analyses are performed and documented according to established guidelines;
- Accuracy of reports and that the data supports the results in the report;
- Associations/Results are properly qualified in the report; and
- The report contains all required information.

The technical review is to include but not necessarily limited to: bench notes, spectra, graphs, external telephone conversation records, investigative reports, sketches, diagrams and laboratory reports. The records must reflect adequate basis for the conclusion.

**5.9.4.2 Technical Reviewers**
Technical reviews must be conducted by individuals authorized by the appropriate Section Chief based on expertise gained through training and experience in the discipline being reviewed. This authorization shall be documented on ASCL-FORM-62).

An individual conducting the technical review does not have to be an active examiner or currently being proficiency tested. The reviewer must have sufficient knowledge of the discipline to verify compliance with the laboratory's technical procedures and that

the conclusions reached are supported with the examination documentation. For those individuals not currently competent in the Discipline, the Section Chief shall write an authorization memo/letter which will be maintained in the individual's Employee History Binder. Additional requirements pertaining to Forensic Biology and CODIS are detailed in the appropriate discipline quality manuals.

**5.9.4.3**

Technical reviews shall not be conducted by the author of the examination records or report under review. An individual verifying a critical finding is not considered as authoring examination records and may conduct the technical review.

**5.9.5 Administrative Review**

The administrative review of the case file will include review of spelling and grammar; case number, date, and initials on appropriate pages; description of evidence and seals; and other appropriate documentation.

Administrative reviews may be conducted by any laboratory analyst or other individuals qualified to perform technical review. Administrative reviews shall not be conducted by the author of the report.

**5.9.5.1 Administrative Review Requirements**

At a minimum, the administrative review shall include:

- A review of the report to ensure consistency with laboratory policy and editorial correctness;
- A review of all administrative and examination records to ensure that they contain the unique ASCL case number and are stored properly in LIMS;
- A review of the examination records to ensure dates are recorded to indicate when the work was performed; and
- A review of examination records to ensure that all corrections in the case file are made consistent with laboratory policy.

**5.9.6 Testimony Review**

The Arkansas State Crime Laboratory maintains a program to monitor and evaluate personnel testifying as expert witnesses. This annual review of courtroom testimony is intended to provide a mechanism for evaluating an analyst's ability to present scientific information in an effective and understandable manner, and to ensure that the testimony is scientifically consistent with the findings documented in the case file.

The laboratory must monitor the testimony of each analyst. This monitoring may be carried out by one or more of the following methods:

- observation of the testimony by a supervisor or a peer
- review of transcripts of testimony given by an examiner
- having one or more officers of the court fill out and return a testimony evaluation form (checklist and/or comment sheet) provided by the laboratory
- telephonic solicitation by a laboratory director or supervisor to one or more officers of the court for responses to the evaluation form

Analysts are encouraged to provide a *Testimony Evaluation Form* (ASCL-FORM-04) to officers of the court and ask them to fill out and return the form to the laboratory. This may substitute for testimony review by supervisory personnel. However, testimony review by supervisory personnel is the preferred method. In any case, a *Testimony Evaluation Form* (ASCL-FORM-04) will be completed by the reviewer and signed by the analyst and supervisor. Feedback shall be given, both positive and in any area needing improvement. If the evaluation is less than satisfactory, the Section Chief will investigate the situation. If deemed necessary, remedial actions shall be taken which may include the following:

- Re-training, including a mock trial
- Courtroom monitoring by the Section Chief for a designated period of time

Results of the evaluations will be maintained in the Employee History Binder of the analyst. If the analyst does not have a completed *Testimony Evaluation Form* (ASCL-FORM-04) for the year, a letter from the Section Chief explaining the circumstances will be placed in the individual's Employee History Binder.



**5.9.7 Testimony Record Retention**

Records of testimony monitoring will be retained for at least 15 years.

## 5.10 REPORTING THE RESULTS

### 5.10.1 General

When analytical conclusions and/or opinions are made on evidence submitted for analysis, a 'Report of Laboratory Analysis' will be issued to the investigating agency (this includes the ASCL Medical Examiner's Office). The results shall be reported accurately, clearly, unambiguously and objectively, and in accordance with any specific instructions in the test methods. Each analyst/examiner will proofread and sign their reports ensuring the report is accurate and error-free. LIMS allows the analyst to sign their reports electronically.

Reports are the same for internal customers

#### 5.10.1.1 Laboratory Report Exceptions

A laboratory report is not required in the following instances.

- Analytical work performed for research activities, training exercises, validation studies or ten print record intercomparisons.
- A case is adjudicated or the customer cancels the request before the work or report is completed.
- Activities for the purpose of constructing an individual characteristic database or maintaining the quality and/or effectiveness of information in such a database.



### 5.10.2 Reports

The laboratory report will contain, at a minimum, the following information except where an alternate location is named.

a) The title, 'Report of Laboratory Analysis.'
b) The name Arkansas State Crime Laboratory and the address of the laboratory that performed the test.
c) Unique ASCL Case # (YYYY-000000) and page number x of x on each page of the report.
d) Investigator's name, investigator's agency and the address of agency.
e) The tests performed will be documented in the analytical notes.
f) Unambiguous identification and description of the item(s). The description may include the general condition of the item (i.e. wet, glass broken, etc.). A more detailed description of the condition of the item, if applicable, will be in the analytical notes.

g) The date the items were received by the laboratory will be documented on the *Evidence Submission Form* (ASCL-FORM-12_WD or ASCL-FORM-63). The date(s) of testing will be documented in the examination record.
h) When sampling is used, the report will be clear that the results are based on a sampling plan. Refer to Section 5.10.3.2 for case record requirements.
i) The results of testing and, where appropriate, the units of measurement.
j) The name, title and electronic signature of the analyst.
k) The following statement will appear on all reports, "The results relate only to the items tested."
l) The following statement will appear on all reports, "This is only an official ASCL report when reproduced in full."

## 5.10.3 Reports (additional requirements)

The information in 5.10.3.1 is contained within the case record except where an alternate location is named. This additional information is to be included on the laboratory report when appropriate or required by the discipline for the interpretation of the reported test results.

### 5.10.3.1 Additional Statements

a) Deviations from, additions to, or exclusions from the protocol and specific test conditions as necessary for the interpretation of the test results.
b) When relevant, a statement of compliance/non-compliance with requirements or specifications shall be included.
c) Estimated uncertainty of measurement shall be on the report for those reported measurements in which an uncertainty calculation has been performed. Records for the estimation of uncertainty of measurement will be maintained in the appropriate discipline and available on request.
d) Where appropriate, interpretations, conclusions, and opinions may be stated on the report.
e) Additional information, as appropriate, shall be included in the report and/or case record as required by the method or the customer.

### 5.10.3.2 Statements on Sampling

If a sampling plan is utilized, the following information shall be included in the case record.

a) The date of sampling.
b) Unambiguous identification of the material sampled
c) When applicable, the location of sampling. This may include any diagrams, sketches or photographs.

d) Sampling procedures in the Discipline Quality Manual shall be followed. If a different sampling procedure is utilized, it must be documented in the case record (and approved by the Section Chief). The case record shall be clear as to what was sampled.
e) Details of any environmental conditions during sampling that may affect the interpretation of the test results.
f) Any standard or other specification for the sampling method or procedure, and deviations, additions to or exclusions from the specification concerned.

**5.10.3.3 Releasing Report Information**
Section 4.13.1.3 *Confidentiality of Records* details procedures for the release of report information.

**5.10.3.4 Report/Testimony on Work of Other Analysts**
ASCL analysts issuing a report based on the examination records generated by another individual shall complete and document a review of all relevant pages of documentation in the case record (e.g., initialing each page of the examination record, the use of a review checklist or statement, etc.).

ASCL analysts testifying based on the examination records generated by another individual shall complete a *Court Case Review Form* (ASCL-FORM-57) on the particular case prior to testifying.

**5.10.3.5 Associations**
When associations are made, the significance of the association shall be communicated clearly and qualified properly in the report.

**5.10.3.6 Eliminations**
When comparative examinations result in the elimination of an individual or object, the report shall clearly communicate the elimination.

**5.10.3.7 Inconclusive Results**
When results are inconclusive, the reason shall be documented in the examination record and/or laboratory report.

## 5.10.4 Calibration Certificates

The ASCL is not a calibration laboratory and does not issue calibration certificates.

### 5.10.5 Opinions and Interpretations

The following statement will appear on all laboratory reports, "The following represents the interpretations/opinions of the undersigned analyst." The case record shall support the basis for the interpretation/opinion.

### 5.10.6 Testing Results Obtained from Subcontractors

If the laboratory report contains results of tests performed by subcontractors, these results shall be clearly identified. Subcontractors performing testing shall provide the results in writing or electronically.

### 5.10.7 Electronic Transmission of Results

The analyst's signature on the laboratory report is electronically secure and may only be affixed with scanning of an analyst's barcode and the use of a PIN number. After the case has been administratively reviewed, the document becomes a static PDF file.

Reports are normally disseminated to the customer through JusticeTrax iResults. Facsimile or email may be used to transmit results to the customer, but the employee must follow Arkansas State Statute 12-12-312 and the policy on *Confidentiality of Records* (Section 4.13.1.3).



### 5.10.8 Report Format

ASCL reports are generated using the LIMS and will be formatted in a manner to accommodate the types of tests conducted and to minimize the possibility for misunderstanding or misuse. Section Chiefs shall ensure that discipline report designs are optimized for the clear presentation of test results.

### 5.10.9 Supplemental and Amended Reports

#### Supplemental Reporting

A supplemental report is necessary when additional evidence is received after the original report has been issued, additional requests for analysis are made, or other additional testing is required in a case (Note: When additional evidence is received on a case that has not been completed, the additional evidence may be analyzed and included in the original report.). A 'supplemental request' will be created in LIMS and all administrative and examination records for the additional evidence will be incorporated electronically into the imaging module of LIMS. Administrative and technical reviews are required before a supplemental report is issued. The statement

"Supplemental Report" will appear below the header information and above the listing of the evidence and the results

All original records will remain in the case record.

**Amended Reporting**

An amended report is necessary if an error is found on the original report (this also includes reports uploaded to iResults). When an amended report is necessary to change the analytical results, the Section Chief or Section Quality Manager will perform the technical review on the amended request. This documentation will be incorporated into the original case file. An 'amended request' will be created in LIMS and all administrative and examination records for the amended analysis will be incorporated electronically into the imaging module of LIMS. Administrative and technical reviews are required before an amended report is issued. The statement "Amended Report" will appear below the header information and above the listing of the evidence and the results. The amended report will contain all of the items on the original report and any amendments. The original report shall be removed from iResults by the iResults Administrator.

All original records will remain in the case record.